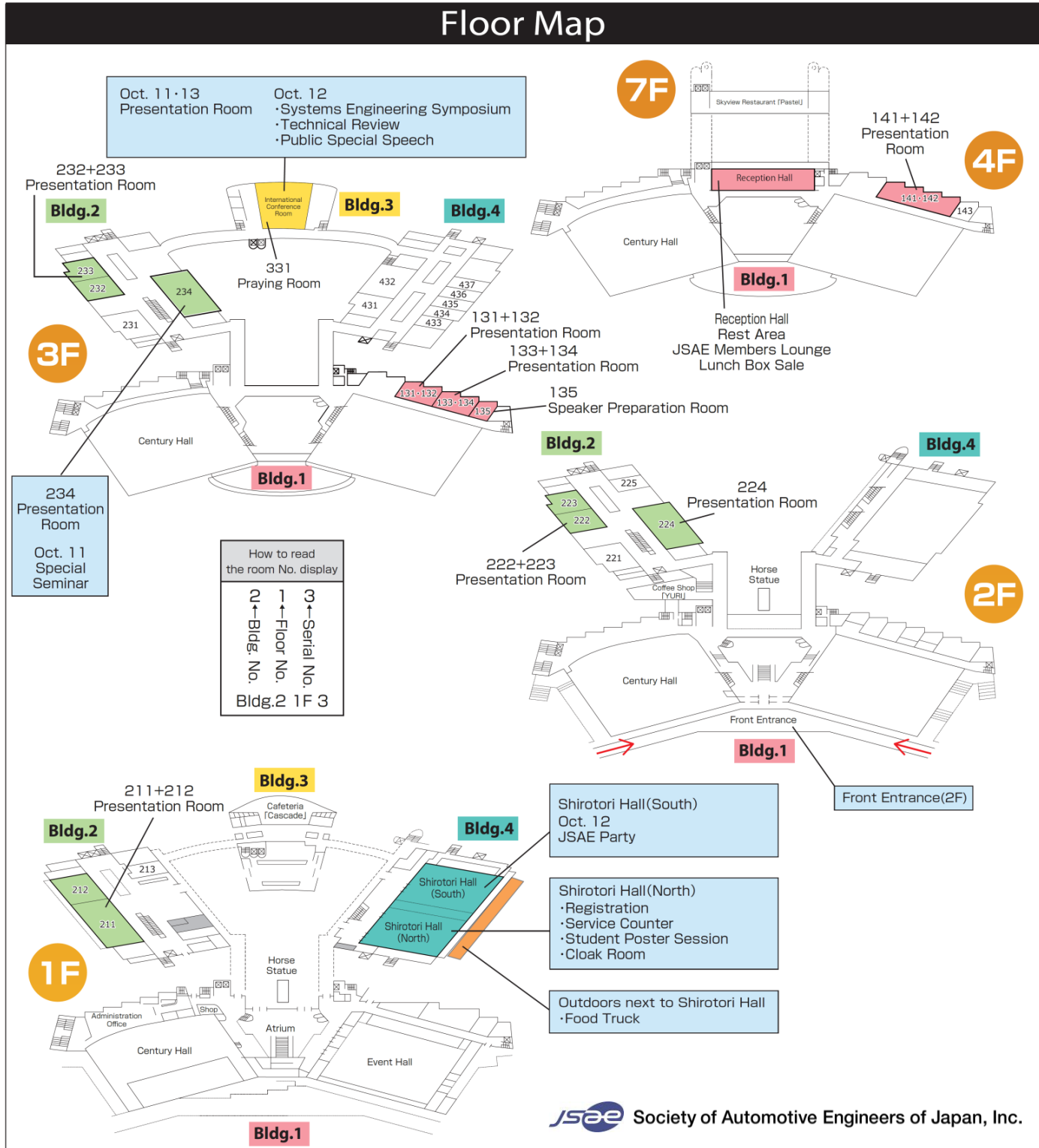


# 2023 JSAE Annual Congress (Autumn)

Wednesday, October 11–Friday, October 13 2023  
Nagoya Congress Center

## Final Program


### Floor Map



YOUR PARTNER IN SIMULATION AND VALIDATION

dSPACE

Omar, Product Manager at dSPACE



## 「その自動運転は安心できますか？ お客様の開発を強力にサポートします」

私たちはお客様とともに、世界中で信頼されている包括的なノウハウとソリューションで自動運転を進化させています。

データロギングからホモロゲーションまでのエンドトゥエンドを幅広いパートナーネットワークで支え、データドリブン開発、シミュレーション、検証のための統合環境を提供します。

dSPACEのソリューションは、お客様の開発環境に簡単に組み込むことができ、開発のスピードアップとコスト削減を支援します。

詳細は、[autonomous-driving.dspace.com](http://autonomous-driving.dspace.com)でご覧ください。

# 2023 JSAE Annual Congress (Autumn)

Wednesday, October 11–Friday, October 13 2023  
Nagoya Congress Center

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Friday, October 13	• • • • • 10- 11

# Information

<https://www.jsae.or.jp/2023aki/english/index.php> All events are in Japanese unless otherwise specified.

Events	Notes	Oct. 11	Oct. 12	Oct. 13
Technical Sessions	Registration Required / Charged	●	●	●
Technical Review	Registration Required / Free		●	
Public Special Speech	Registration Required / Free		●	
JSAE Party	Registration Required / Charged		●	
Student Poster Session	Registration Required / Free	●	●	●
Special Seminar	Registration Required / Free	●		

Facility	Bldg.	Floor	Place
Wi-Fi	SSID : ncc		
Restaurant	Bldg.1	2F	The neighborhood of catwalk with Building No. 1
Vending machine	Bldg.1	1F	Century hall side atrium
	Bldg.1	1F	Near the communicating passage with Building No. 4
	Bldg.2	1F	Near the Exhibition room 213
	Bldg.3	1F	The neighborhood of east side (the entrance left hand) stairs
	Bldg.4	1F	Near the Shirotori Hall(South)
	Bldg.2	2F	Near the Conference Rooms 223
	Bldg.2	3F	Near the Conference Rooms 233
	Bldg.1	3F	Event hall side escalator neighborhood
Shop	Bldg.1	1F	Near the Century Hall
Copier and FAX	Bldg.1	1F	Near the Century Hall
PC corner	Bldg.1	1F	Acceptance of administrative office next door
Food Truck	-	1F	Parking lot next to Bldg.4
Lunch Box Sale	Bldg.1	4F	Reception Hall 100 boxes/day only
Praying Room	Bldg.3	3F	Room 331

## Opening Hours

### Wednesday, October 11

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<b>Registration</b>	Bldg.4 1F Shirotori Hall (North)	8:00~17:00
<b>Service Counter</b>	Bldg.4 1F Shirotori Hall (North)	8:00~17:00
<b>Cloak Room</b>	Bldg.4 1F Shirotori Hall (North)	8:00~18:00
<b>Speaker Preparation Room</b>	Bldg.1 3F 135	8:00~17:00
<b>JSAE Members Lounge</b>	Bldg.1 4F Reception Hall	9:00~17:10

### Thursday, October 12

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<b>Registration</b>	Bldg.4 1F Shirotori Hall (North)	8:30~17:30
<b>Service Counter</b>	Bldg.4 1F Shirotori Hall (North)	8:30~17:30
<b>Cloak Room</b>	Bldg.4 1F Shirotori Hall (North)	8:30~19:15
<b>Speaker Preparation Room</b>	Bldg.1 3F 135	8:30~13:15
<b>JSAE Members Lounge</b>	Bldg.1 4F Reception Hall	9:00~17:15

### Friday, October 13

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<b>Registration</b>	Bldg.4 1F Shirotori Hall (North)	8:30~17:00
<b>Service Counter</b>	Bldg.4 1F Shirotori Hall (North)	8:30~18:00
<b>Cloak Room</b>	Bldg.4 1F Shirotori Hall (North)	8:30~18:45
<b>Speaker Preparation Room</b>	Bldg.1 3F 135	8:30~17:15
<b>JSAE Members Lounge</b>	Bldg.1 4F Reception Hall	9:00~17:00

# Other Events

## Technical Review

【Registration Required / Free】 \*Language : Japanese

**October 12th 14:30-16:00, Bldg.3 3F International Conference Room**

Speaker

1. Atsushi Yamamoto (Toyota Motor Corporation)
2. Akemi Ito (Tokyo City University)



## Public Special Speech

【Registration Required / Free】 \*Language : Japanese

**October 12th 16:15-17:15, Bldg.3 3F International Conference Room**

Yoshihiro Tanaka(Nagoya Institute of Technology)



## JSAE Party

【Registration Required / Charged】

**October 12th 17:30-19:00, Bldg.4 1F Shirotori Hall (South)**

\*Registration has closed.

## 6th Student Poster Session

【Registration Required / Free】 \*Language : Japanese

**October 11th ~October 13th, Bldg.4 1F Shirotori Hall (North)**

## Systems Engineering Symposium

【Registration Required / Free】 \*Language : Japanese

**October 12th 9:30-12:15, Bldg.3 3F International Conference Room**

## Special Seminar

【Registration Required / Free】 \*Language : Japanese

**October 11th 14:00-15:30, Nagoya Congress Center Bldg.2 3F 234**

# MEMO

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# Wednesday, October 11 Congress Timetable

	131+132	133+134	141+142	211+212	222+223
	Bldg.1 3F	Bldg.1 3F	Bldg.1 4F	Bldg.2 1F	Bldg.2 2F
9:30		<b>No.89</b> <b>Metal Materials I</b> 008 009 010 011 012 No. of presentation: 5	<b>No.92</b> <b>Vehicle Dynamics and Control I</b> 021 022 023 Break 024 025 026	<b>No.95</b> <b>System Integration Engine I</b> <u>035</u> 036 037 038 No. of presentation: 4	<b>No.98</b> <b>Fuel Cell System</b> 047 048 049 050 No. of presentation: 4
12:00		11:35	No. of presentation: 6	11:10	
		12:35	12:10	<b>No.96</b> <b>System Integration Engine II</b> 039 040 041 042 No. of presentation: 4	<b>No.99</b> <b>Vehicle Energy Management System</b> 051 052 053 054 No. of presentation: 4
	13:00	<b>No.90</b> <b>Metal Materials II</b> 013 014 015 016 No. of presentation: 4	13:10	13:50	13:50
14:00	<b>No.87</b> <b>Vehicle Development I</b> -Motorcycles, Parts, Evaluation- 001 002 003 No. of presentation: 3		<b>No.93</b> <b>Vehicle Dynamics and Control II</b> <u>027</u> 028 029 030 No. of presentation: 4		
	14:15	14:15		14:30	
		14:55	14:50	<b>No.97</b> <b>Compression-Ignition Engine · Hydrogen Engine</b> 043 044 045 046 No. of presentation: 4	<b>No.100</b> <b>Environment /Fuel Efficiency /Efficiency</b> 055 056 057 <u>058</u> 059
16:00	<b>No.88</b> <b>Vehicle Development II</b> -Computer Aided Design- 004 005 006 007 No. of presentation: 4	<b>No.91</b> <b>Metal Materials III</b> 017 018 019 020 No. of presentation: 4	<b>No.94</b> <b>Vehicle Dynamics and Control III</b> 031 032 033 034 No. of presentation: 4	16:10	No. of presentation: 5
		16:35			16:35
17:30			17:10		

- \* Time allocated for a presentation is 25 minutes; 15 minutes for presentation and 10 minutes for Q&A.
- \* Program subject to change.
- \* Boxed numbers denote English presentations.



224	232+233	234	International Conference Room	Shirotori Hall (North)
Bldg.2 2F	Bldg.2 3F	Bldg.2 3F	Bldg.3 3F	Bldg.4 1F
<b>No.101</b> <b>Human Machine Interface</b> 060 061 062 063 064 No. of presentation: 5	<b>No.103</b> <b>Thermal and Fluid Technologies I</b> -Cooling, Air Conditioning- 071 072 073 074 075 No. of presentation: 5	<b>No.106</b> <b>Automated Driving and Advanced Driver Assistance I</b> -Environmental Recognition and Localization- 085 086 087 088 No. of presentation: 4	<b>No.107</b> <b>Automated Driving and Advanced Driver Assistance II</b> -Technology for Development and Evaluation I- 089 090 091 092 No. of presentation: 4	10:00
				<b>Student Poster Session</b>
11:35				
12:10				
<b>No.108</b> <b>Automated Driving and Advanced Driver Assistance III</b> -Unmanned Mobile Service Technology Development- 093 094 095 096 No. of presentation: 4				
12:35				
<b>No.102</b> <b>Human Factors in Automated Driving</b> 065 066 067 Break 068 069 070 No. of presentation: 6	<b>No.104</b> <b>Thermal and Fluid Technologies II</b> -Aerodynamics- 076 077 078 079 080 No. of presentation: 5	14:00	<b>No.109</b> <b>Automated Driving and Advanced Driver Assistance IV</b> -Vehicle-Infrastructure Coordination Technology- 097 098 099 100 No. of presentation: 4	13:50
		14:40		14:30
15:15	15:20	<b>Special Seminar</b>	15:30	16:00
<b>No.105</b> <b>Thermal and Fluid Technologies III</b> -Aerodynamics- 081 082 083 084 No. of presentation: 4	17:00			16:10

Engine · After treatment · Powertrain	Body·Chassis· Production machining	ITS· Human Engineering	Parts· Materials	CAE/NV· Measurement· Fluid	HV · PHV · EV	Safety	Others
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# Thursday, October 12

## Congress Timetable

	131+132	133+134	141+142	211+212	222+223
	Bldg.1 3F	Bldg.1 3F	Bldg.1 4F	Bldg.2 1F	Bldg.2 2F
9:30	<b>No.110</b> <b>Vehicle Development III</b> 101 102 103 104 No. of presentation: 4	<b>No.112</b> <b>Organic and Polymer Materials I</b> 110 111 112 113 114 No. of presentation: 5	<b>No.114</b> <b>Dynamics, Control and Safety of Two-wheeled Vehicles I</b> 120 121 122 123 124 No. of presentation: 5	<b>No.116</b> <b>Improving engine efficiency</b> 131 132 133 134 135 No. of presentation: 5	<b>No.118</b> <b>Motor Drive System</b> 139 140 141 142 143 No. of presentation: 5
11:10				11:35	
12:00	12:10				
	<b>No.111</b> <b>Car Structure</b> 105 106 107 108 109 No. of presentation: 5	<b>No.113</b> <b>Organic and Polymer Materials II</b> 115 116 117 118 119 No. of presentation: 5	<b>No.115</b> <b>Low Gas Emissions</b> 125 126 127 Break 128 129 130 No. of presentation: 6	<b>No.117</b> <b>Driver Workload</b> 136 137 138 No. of presentation: 3	<b>No.119</b> <b>Charging System</b> 144 145 146 147 148 No. of presentation: 5
14:00	14:15	14:40	15:15	13:50	14:40
16:00					
17:00					
18:00					
19:00					

- \* Time allocated for a presentation is 25 minutes; 15 minutes for presentation and 10 minutes for Q&A.
- \* Program subject to change.
- \* Boxed numbers denote English presentations.

224	232+233	234	International Conference Room	Shirotori Hall (North)	Shirotori Hall (North)	
Bldg.2 2F	Bldg.2 3F	Bldg.2 3F	Bldg.3 3F	Bldg.4 1F	Bldg.4 1F	
	<b>No.121</b> <b>Elderly Driver /Elderly Pedestrian</b> 154 155 156 157 No. of presentation: 4	<b>No.123</b> <b>Automated Driving and Advanced Driver Assistance V</b> -Vehicle Control and Remote Operation- 162 163 164 Break 165 166 167 No. of presentation: 6	<b>Systems Engineering Symposium</b>	10:00		
	11:10			<b>Student Poster Session</b>		
	12:10	12:10			12:15	
13:00	<b>No.122</b> <b>Driver Behavior /Cyclist Behavior</b> 158 159 160 161 No. of presentation: 4	13:10				
<b>No.120</b> <b>Noise, Vibration, and Ride Quarity I</b> 149 150 151 152 153 No. of presentation: 5	13:50	<b>No.124</b> <b>Automated Driving and Advanced Driver Assistance VI</b> -Technology for Development and Evaluation II- 168 169 170 171 No. of presentation: 4			14:30	
15:05		14:50	<b>Technical Review</b> Speaker 1. Atsushi Yamamoto (Toyota Motor Corporation) 2. Akemi Ito (Tokyo City University)			
			16:00	16:00		
			16:15			
			<b>Public Special Speech</b> Speaker Yoshihiro Tanaka (Nagoya Institute of Technology)			
			17:15			
					17:30	
					<b>JSAE Party</b>	
					19:00	

Engine · After treatment · Powertrain	Body·Chassis· Production machining	ITS· Human Engineering	Parts· Materials	CAE/NV· Measurement· Fluid	HV · PHV · EV	Safety	Others
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# Friday, October 13 Congress Timetable

	131+132	133+134	141+142	211+212	222+223
	Bldg.1 3F	Bldg.1 3F	Bldg.1 4F	Bldg.2 1F	Bldg.2 2F
9:30	<b>No.125</b> <b>Crash Safety</b> 172 173 174 175 176  No. of presentation: 5	<b>No.128</b> <b>Production, Manufacturing</b> 187 <b>188</b> <b>189</b> No. of presentation: 3  10:45	<b>No.131</b> <b>Pedal Operation of Elderly Drivers</b> 199 200 201 202 203  No. of presentation: 5	<b>No.134</b> <b>Three Way Catalyst</b> <b>213</b> 214 215 216 217  No. of presentation: 5	<b>No.136</b> <b>Engine Components, Lubricants, Tribology</b> 223 224 225 Break 226 227 228  No. of presentation: 6
12:00	11:35  12:35	11:45 <b>No.129</b> <b>Driver Perception /Cognition</b> 190 191 192 193 194 No. of presentation: 5	12:35 <b>No.132</b> <b>Driver's Posture /Driving Comfort</b> 204 205 206 No. of presentation: 3	11:35  12:35 <b>No.135</b> <b>Post-Treatment System</b> <b>218</b> 219 220 221 222 No. of presentation: 5	12:10  13:10 <b>No.137</b> <b>Power Transmission</b> 229 230 231 232 233
14:00	14:15  14:55	13:50  14:30 <b>No.130</b> <b>Crash Safety Structure</b> 196 196 197 198 No. of presentation: 4	13:50  14:30 <b>No.133</b> <b>Driver Sensitivity /Physiology</b> 207 <b>208</b> 209 Break 210 211 212 No. of presentation: 6	14:40	15:15
16:00	181 182 183 Break 184 185 186  No. of presentation: 6	16:10	17:10		
17:35					
18:00					
19:00					

- \* Time allocated for a presentation is 25 minutes; 15 minutes for presentation and 10 minutes for Q&A.
- \* Program subject to change.
- \* Boxed numbers denote English presentations.

224	232+233	234	International Conference Room	Shirotori Hall (North)
Bldg.2 2F	Bldg.2 3F	Bldg.2 3F	Bldg.3 3F	Bldg.4 1F
<b>No.138</b> <b>Noise, Vibration, and Ride Quality II</b> 234 235 236 Break 237 238 239 No. of presentation: 6	<b>No.140</b> <b>Driving Behavior</b> 245 246 247 248 249 No. of presentation: 5	<b>No.143</b> <b>Communication and Electronics I</b> -Control Platform- 261 262 263 Break 264 265 266 No. of presentation: 6	<b>No.146</b> <b>Vehicle Cabin Air Quality Control I</b> 277 278 279 280 No. of presentation: 4	10:00
12:10	11:35	12:10	11:10	<b>Student Poster Session</b>
13:10	12:35	13:10	12:10	
<b>No.139</b> <b>Noise, Vibration, and Ride Quality III</b> 240 241 242 243 244 No. of presentation: 5	<b>No.141</b> <b>Driving Assistant Technology</b> 250 251 252 253 254 No. of presentation: 5	<b>No.144</b> <b>Communication and Electronics II</b> -Communication Technology- 267 268 269 270 No. of presentation: 4	<b>No.147</b> <b>Vehicle Cabin Air Quality Control II</b> 281 282 283 284 285 No. of presentation: 5	
15:15	14:40	14:50	14:15	
	15:20	15:30	16:00	
	<b>No.142</b> <b>Safety Education and Risk Prediction</b> 255 256 257 Break 258 259 260 No. of presentation: 6	<b>No.145</b> <b>Communication and Electronics III</b> -Design and Development- 271 272 273 Break 274 275 276 No. of presentation: 6		
	18:00	18:10		

Engine · After treatment · Powertrain	Body-Chassis Production machining	ITS· Human Engineering	Parts· Materials	CAE/NV· Measurement· Fluid	HV · PHV · EV	Safety	Others
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Oct. 11 (Wed.)

## JSAE Annual Congress Autumn, Technical Session Program

- This program is based on the data as of September 7th, 2023.
- The abstracts of the presentations are available on the timetable of the website.  
[ <https://gakkai-web.net/jsae/a/2023/program/data/jp/time-table.html> ]
- There may be withdrawn presentations.
- Boxed numbers denote English Presentations.

131+132

[13:00-14:15]

### 87 Vehicle Development I -Motorcycles, Parts, Evaluation- Tetsuo Maki (Tokyo City University)

- 001 Necessity of Body Torsional Rigidity of Personal Mobility Vehicles (PMVs) with an Inward Tilting Mechanism  
Tetsunori Haraguchi  
(Nihon University/Nagoya University)  
Tetsuya Kaneko (Osaka Sangyo University)  
Ichiro Kageyama (Nihon University)
- 002 An Effective Scenario Generation Methodology to Develop Sophisticated Automated Driving System via Multi-Agent Traffic Simulation  
Sou Kitajima · Nobuyuki Uchida (JARI)  
Naoki Suganuma (Kanazawa University)  
Tadashi Okuno (OS Planning)  
Jun Tajima (Misaki Design)
- 003 Development of Batteryless Technology of Sensor around Tyre using Triboelectrification Phenomenon  
Mutsuki Sugimoto · Kenichi Kuroda ·  
Takahiro Fujiwara · Kengo Fujiwara · Hisae Kamekawa  
(Sumitomo Rubber Industries)  
Hiroshi Tani (Kansai University)

[14:55-16:35]

### 88 Vehicle Development II -Computer Aided Design- Toshiaki Sakurai (Tokyo City University)

- 004 Construction of Online Co-Simulation Environment (3)  
-A Prediction Accuracy Improvement of A Vehicle Performance using an Engine Thermal Plant Model (Third Report)  
Kenichiro Ogata · Naoaki Takeda · Go Toshizane ·  
Hiromu Iwase (Honda Motor)  
Ryohei Sugamata · Mitsunobu Saito  
(Honda R&D)
- 005 A Feasibility Study for Quantum Computing Methodologies in Automotive Advanced Material Investigation 2  
-Application for Functional Material Screening Problem with Quantum Inspired Methodologies  
Yoshinori Suga (Toyota Motor)  
Akito Maruo · Hideyuki Jippo (Fujitsu)

- 006 Finite Element Simulation of Resistance Spot Welding of Aluminized Hot-Stamped Steel Sheets  
Manabu Fukumoto (Nippon Steel)  
Naoya Tada (Okayama University)

- 007 Development of Auto Calibration Method for Transmission Control, using Deep Reinforcement Learning and AI Surrogate Model  
Hiroaki Kosugi · Koichi Hirao · Takahito Inoh ·  
Ayano Awaji · Mitsuo Yamamoto (SUBARU)

133+134

[9:30-11:35]

### 89 Metal Materials I Yoshimasa Ureshino (Toyota Motor)

- 008 Method for Evaluating the Ductile Fracture Properties of Steel Sheet under Shear Stress Conditions  
Asato Hatamoto · Hiroshi Shimanuki (Nippon Steel)
- 009 Production and Performance Evaluation of A-Pillar Parts with 3rd Generation High Tensile Stretch Steel  
Yuki Taguchi · Yasuhiro Maeda (Kobe Steel)
- 010 Evaluation Method for Delayed Fracture of Steel Sheet by Four-Point Loaded Specimen  
-Influence of Sheared Edge on Delayed Fracture Resistance in Ultra-High Strength Steel Sheets  
Junya Tobata · Hideyuki Kimura · Shinjiro Kaneko ·  
Yuichi Matsuki · Toyohisa Shinmiya (JFE Steel)
- 011 Challenge to Create the Ultimate Strong Tough Materials Beyond Ultra-High-Strength Fail-Safe Steel  
-Utilization of Biomimetics  
Tadanobu Inoue · Yuuji Kimura · Yuka Hara ·  
Toru Hara · Koji Nakazato  
(National Institute for Materials Science)  
Shinichiro Oka (Okinawa Churashima Foundation)
- 012 Effect of Carbon Content on Impact Fracture Behavior of Hot Stamped Steel Sheets  
Katsuyuki Inoue · Ryohei Yukishige · Minami Yamada ·  
Momoyo Sawai · Shingo Nakajima  
(Kobelco Research Institute)

# Oct. 11 (Wed.)

[12:35-14:15]

## 90 Metal Materials II

Ryohei Ishikura (Daido Steel)

- 013 Numerical Studies on Effects of Various Factors on Residual Stress Distribution Characteristics in Induction Hardened Shafts  
Tomoki Oyabu · Shigetaka Okano (Osaka University)  
Yoshitomi Yamada (Isuzu Motors)  
Masahito Mochizuki (Osaka University)
- 014 Spring-Back Suppression Forming Technology of Automotive Parts by using In-Plane Compression  
Hirotoshi Miyake (JFE Steel)  
Daisuke Toyoda (KTH Parts Industries)  
Yoichi Konkawa (H-ONE)  
Toyohisa Shinmiya · Yuji Yamasaki · Yoshikiyo Tamai (JFE Steel)  
Hiroyuki Takebe (KTH Parts Industries)
- 015 Corrosion Resistance of Various Surface Plated Steel Sheets to Cooling Water  
Kyohei Miyake · Sho Matsui · Katsunari Norita · Shin Ueno · Shinichi Yamaguchi (Nippon Steel)
- 016 Efforts to Improve the Prediction Accuracy of Fracture in Metal Sheet using Anisotropic Yield Functions  
Ryohei Yukishige · Katsuyuki Inoue · Shingo Nakajima (Kobelco Research Institute)

[14:55-16:35]

## 91 Metal Materials III

Shunji Hiwatashi (Nippon Steel)

- 017 Effect of Tensile Direction on HAZ Softening Fracture of Laser Welded Martensite Steel Sheet  
Yukiko Amano · Kazunari Yoshida · Hiroaki Kubota (Tokai University)
- 018 Fatigue Fracture of a Welded Joint of Elbow and Socket Subjected to Mixed Loadings  
Gyoko Oh · Atsushi Umezawa (Tokyo Roki)
- 019 Analysis of Loads Applied to Wheels of Off-Road Vehicles and a Study on Loosening of Hub Bolts and Nuts  
Soichi Hareyama · Ken-ichi Manabe · Satoshi Kobayashi (Tokyo Metropolitan University)
- 020 Fatigue Life Prediction by Nominal Structural Stress of Arc Welding Structure -Study on Flared Joint  
Atsushi Fueki · Akifumi Okabe · Noboru Tomioka (Nihon University)

141+142

[9:30-12:10]

## 92 Vehicle Dynamics and Control I

Junya Takahashi (Hitachi)

- 021 Development of Machine Learning Model to Predict Driver's Subjective Evaluation of Tire during Lane Change Operation  
Mitsuyoshi Hamatani · Satoru Kawamata · Shinya Honda · Kazuo Uchida (Bridgestone)  
Kazunori Ohno · Masashi Konyo (Tohoku University)

- 022 Effect of Tread Model Alteration on Tire Specification Development  
Takayuki Toyoshima (Honda R&D)  
Toshiaki Matsuzawa · Takeshi Hotaka (Honda Motor)  
Eisei Higuchi (Honda R&D)

- 023 Study on Objective Analysis of Tire Performance in Mud Off-Road and Correspondence between Subjective Evaluation and Objective Evaluation  
Koshi Nishikawa · Takeo Atsumi (Toyota Motor)

- 024 Study on  $\mu$ -s Characteristics of Tires using a Brush Model  
Ichiro Kageyama (Consortium on Advanced Road-Friction Database/Nihon University)  
Atsushi Watanabe · Yukiyo Kuriyagawa (Nihon University)  
Tetsunori Haraguchi (Consortium on Advanced Road-Friction Database/Nihon University)  
Tetsuya Kaneko (Osaka Sangyo University)  
Minoru Nishio (Absolute)

- 025 Clarification of Mechanism and Development of Control to Improve Sandy Soil Off-Road Driving Performance (First Report)  
Yusuke Kimura · Takanobu Kawano (SOKEN)  
Yuya Hozumi · Yusuke Nozaki · Shinichiro Nogawa (Toyota Motor)

- 026 Clarification of Mechanism and Development of Control to Improve Sandy Soil Off-Road Driving Performance (Second Report)  
Yuya Hozumi · Yusuke Nozaki · Shinichiro Nogawa (Toyota Motor)  
Yusuke Kimura · Takanobu Kawano (SOKEN)

[13:10-14:50]

## 93 Vehicle Dynamics and Control II

Yoshikazu Hattori (Toyota Central R&D Labs.)

- 027 An Investigation on Chassis System Control based Fail-Over Logic as the 2nd Redundancy of Steer-by-Wire System  
Kyuwon Kim · Miri Jeong · Kwanwoo Park (Hyundai Motor)
- 028 The Creation of New Value by Front and Rear in-Phase Steering  
Wataru Sato · Yoshiaki Tsuchiya · Shogi Fukukawa (AISIN)
- 029 Brake Torque Estimation Based on Relationship between Vehicle Motion and Tire Characteristics using Vehicle Longitudinal Acceleration and Wheel Speed  
Shinji Seto (Hitachi)  
Daisuke Goto (Hitachi Astemo)
- 030 Influence and Countermeasure of Vehicle Electrification on Ride Comfort  
Shingo Koumura (Toyota Motor)  
Makoto Yamakado · Masato Abe · Masaki Yamamoto (Kanagawa Institute of Technology)  
Tsuyoshi Yoshimi (Toyota Motor)

# Oct. 11 (Wed.)

[15:30-17:10]

## 94 Vehicle Dynamics and Control III

Takayuki Toyoshima (Honda R&D)

- 031 Discrete Element Method Simulations for Estimation of Driving Performance on Sand  
Yohei Nakamura · Kensuke Ito · Ryota Suzuki · Masaaki Nawano (Nissan Motor)  
Masataku Sutoh · Yuji Katsumata (JAXA)
- 032 A Numerical Study on the Dynamic Roll Center under Steering Torque Input  
Kouta Tanizaki · Hideki Sakai (Kindai University)
- 033 A Study on the Physical Meaning of the Numerator of the Transfer Function of the Two-Wheel Model  
Yuta Hishinuma · Wei Wang · Hiroshi Mouri (Tokyo University of Agriculture and Technology)
- 034 Study of Powertrain Output Torque Model using Machine-Learning and Application to TCS Simulation  
Sotaro Takahashi · Takuya Kato · Yutaro Kasuya · Kenichi Meguro · Noriharu Nemoto · Masato Onaka (BOSCH)  
Kenta Aoshima (SCSK)

211+212

[9:30-11:10]

## 95 System Integration Engine I

Yasuo Moriyoshi (Chiba University)

- 035 Ignition Control Strategy Considering the Effect of Humidity on Combustion Characteristics of Gasoline Engines under EGR Conditions  
Chan Ki Min · Sung Wook Lee · Jin Hong Kim (Hyundai Motor)
- 036 Consideration of the Relationship between Combustion Characteristics and Pre-Chamber Specifications in an Internal Combustion Engine with Pre-Chamber Jet Combustion  
Ryosuke Shiina · Yusuke Shintani · Hirokazu Ando · Noritaka Kimura (Honda R&D)
- 037 Multi-Component Fuel Spray Deposition and Evaporation Behaviors by Means of Exciplex Fluorescence Techniques  
Masaaki Kato · Ryo Adachi · Yoshirou Shiina · Tomohiro Nakayama (SUBARU)
- 038 Analysis of Basic Characteristics for Small Two-Stroke Opposed Piston Engine  
Ryo Igarashi · Kazuho Tokita · Akira Iijima (Nihon University)

[12:10-13:50]

## 96 System Integration Engine II

Tsukasa Hori (Osaka University)

- 039 MBD Development of Super Lean Gasoline Engine using Kolmogorov Scale  
Hiroyuki Sakai · Koshiro Kimura · Tetsuo Omura · Daishi Takahashi (Toyota Motor)

- 040 Analysis of Unburned Hydrocarbons Emission during Lean Burn Operations in Spark Ignition Engines  
Ryohei Okajima · Tatsuya Kuboyama · Yasuo Moriyoshi (Chiba University)

- 041 Study on the Formation Mechanism of Deposits on Air-Fuel Ratio Sensors  
Kazuho Yoshida · Kenta Furutani · Kento Okusa · Hongbin Qi · Kotaro Tanaka (Ibaraki University)  
Shouta Tobe · Kouta Ishizaka · Tasuku Hasejima · Tetsuo Kitagawa · Masahiro Ono (SUBARU)

- 042 Study on the Formation Mechanism of Deposits Generated from Exhaust Gas of Gasoline Spark-Ignition Engines  
Kento Okusa · Kenta Furutani · Kazuho Yoshida · Satoshi Sakaida · Kotaro Tanaka · Mitsuru Konno (Ibaraki University)  
Koichi Kinoshita · Yohko Abe (AIST)  
Satoshi Kodama · Shinsuke Mori (Tokyo Institute of Technology)

[14:30-16:10]

## 97 Compression-Ignition Engine · Hydrogen Engine

Nobumasa Ohashi  
(Isuzu Advanced Engineering Center)

- 043 Construction of Equation for Predicting Amount of Soot Contamination in Lubricating Oil from Spray Flame at Diesel Combustion  
Yamato Goto · Shoi Koshikawa · Eriko Matsumura (Doshisha University)
- 044 Controlling the Dynamics of Cycle-to-Cycle Variation of Combustion  
Yuto Matsushima · Seiya Sugimoto · Yukio Haizaki · Shigeru Nakagawa · Shuhei Shintani · Masaki Miyoshi · Masahiro Ueki · Yuichiro Tsumura (Mazda)
- 045 Study on Improvement of Mixture Homogeneity of Hydrogen Engine by Jet  
Takeshi Sakuma · Kenji Aoyagi · Akichika Yamaguchi · Azusa Higuchi · Yasuhiro Sogabe (DENSO)  
Shiro Tanno (Toyota Motor)
- 046 Soot Formation Condition for In-Cylinder Combustion of Oxymethylene Dimethyl Ether (OME)  
Takayuki Fuyuto · Yoshiyuki Mandokoro · Teruaki Kondo · Kazuaki Nishikawa · Reiko Ueda · Yoshiki Takatori · Yoshifumi Wakisaka · Hidemasa Kosaka (Toyota Central R&D Labs.)

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[9:30-11:10]

## 98 Fuel Cell System

Kenichiro Ueda (Honda R&D)

- 047 Predicting Fuel Cell Gas Diffusion Layer Performance using Simulation  
Yuki Ota · Ryosuke Maekawa · Daisuke Hayashi (Toyota Motor)



048 Characteristics of Fuel Cell Models Used in Model-Based Development and Its Application to Simulation  
Tomoya Sukigara · Kazuhiko Kurokawa · Kensuke Tsukahara · Yuji Yajima (MCOR)

049 Development of a Driving Energy Simulator for a Fuel Cell Hybrid Test Train  
Takashi Yoneyama  
 (Railway Technical Research Institute)  
 Hidehiro Tanuma · Shun Yoshioka · Wei-Hsiang Yang · Yushi Kamiya (Waseda University)  
 Takayuki Kashiwagi · Takamasa Yamada · Manato Kaneko · Manato Kanzaki (Railway Technical Research Institute)

050 A Study on Korean Vehicle Power Test Method Based on Fuel Cell Bus Test Results (Second Report)  
 -Hybrid Power System Method between Fuel Cell System and Battery  
Hosik Lee · Sukjoo Kim (TENERGY)  
 Jongwan Kim · Namyong Kim · Kwangil Kim (Korea Automobile Testing & Research Institute)  
 Yonghun Kim (Chungnam National University)

[12:10-13:50]

99 Vehicle Energy Management System  
 Koichiro Muta (Toyota Motor)

051 Implementation of Battery Degradation Model for Vehicle System 1D Simulation Based on Lithium Iron Phosphate Battery  
Yuya Hato · Toshio Hirota · Yushi Kamiya (Waseda University)  
 Kiyotaka Sato (Mazda)

052 Development and Performance Evaluation of Vacuum Insulated Double Structure Plate for EVs  
Minoru Tsuda · Junichi Ohara · Masateru Ishida · Tsuyoshi Ihara · Kazuyuki Maeda (National Fisheries University)

053 Study of BEV ECO-Driving Methods using Mode and Real Driving Tests  
 -Actual Road Power Consumption Assessment and Characteristics  
 Michael Melkior Kanugroho · Yuta Nakane · Taizo Otsuki · Akira Kato (Teikyo University)

054 A Method for Predicting Real-World Energy Consumption by Converting Real-World Driving Data to a Specific Driving Cycle  
Aoi Ikushima · Hiroshi Kawazoe · Sayaka Tanaka · Takashi Saito · Masahiro Nishikawa · Yoji Komatsu (HORIBA)

[14:30-16:35]

100 Environment/Fuel Efficiency /Efficiency  
 Gen Shibata (Hokkaido University)

055 An Analysis on the Effects of Eco-Driving Activities on Improving Fuel Economy by Various Operators  
Masaru Kumai (Eco-Mo Foundation)  
 Hiroshi Maji (ASUA)  
 Yasuhiro Daisho (Waseda University)

056 Survey on the Quality of Synthetic Fuels and Research for the Use of FT Synthetic Oils as an Automotive Fuels  
Kenichi Okamoto · Noriaki Ohmori · Takeru Ohtsuka · Mitsunori Tabata · Yoshihiro Fukuda (Japan Petroleum Energy Center)

057 The Effect of Paraffinic Fuels on Rubber Components  
Takeru Ohtsuka · Kenichi Okamoto · Noriaki Ohmori · Yoshihiro Fukuda · Mitsunori Tabata (Japan Petroleum Energy Center)

058 Lubricant Mechanisms of Eco-Friendly Lubricant Blended with Mineral Oil for Steel-Steel Contact  
Juliana Basiron · Mohd Fadzli Bin Abdollah (Universiti Teknikal Malaysia Melaka)

059 Research on Hydrogen Flow Rate Measurement for Fuel Consumption Measurement of Heavy-Duty FCV  
Hisakazu Suzuki · Noritsune Kawaharada (NALTEC)  
 Yukiji Ohkura (JAMA)

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[9:30-11:35]

101 Human Machine Interface  
 Satori Hachisuka (The University of Tokyo)

060 Study of Braking Control in New System for Hand Operation (First Report)  
Kaito Ogawa · Tomoihiro Yokoyama · Masayuki Soga · Yasushi Okada (Toyota Motor)

061 Driver State Detection for Guidance Presentation Timing Control of In-Vehicle Speech User Interface  
Atsunobu Kaminuma (Nissan Motor)  
 Lopez Guillaume · Yuta Nishizawa (Aoyama Gakuin University)

062 Collection of Voice Control Utterances during Driving using Dialogue System with Question-Answering Database and Large Language Model  
Koichiro Karasawa · Akinobu Lee (Nagoya Institute of Technology)  
 Atsunobu Kaminuma (Nissan Motor)

063 Effectiveness of Signal Road Projection during Lane Changes  
Yoshiro Aoki · Yoko Kato · Michiaki Sekine (NALTEC)  
 Yukiko Kitazawa · Yuki Sudo (Koito Manufacturing)

064 Study on Following Driver's Recognition of Low-Speed Automated Driving Service Car's Intention When using a Combination of External HMI and Lateral Driving Position  
 -Towards Communication Design to Get Following Drivers to Safely Overtake near Curved Sections of the Road  
Maki Yoshida · Tatsuru Daimon · Masahiro Taima (Keio University)

# Oct. 11 (Wed.)

[12:35-15:15]

## 102 Human Factors in Automated Driving

Toshihisa Sato (AIST)

- 065 Identification of Environmental Factors in Intersections Leading to Traffic Accidents for Safety Assessment of Automated Driving Systems (Second Report)  
Hiroshi Yoshitake (The University of Tokyo)  
Motoki Shino (Tokyo Institute of Technology)
- 066 Research on the Effect on Surrounding Vehicles when the Automated Driving Vehicle Merges or Diverges on a Highway  
Yuki Manabe · Toru Kojima · Kouichi Kitada (NALTEC)
- 067 Design and Evaluation of Driving Support System for Take-Over from Automated Driving in Merging Section on Expressway (First Report)  
Masanori Takemoto (Seikei University)
- 068 Impact of Intermittent Cycle Changes in Warning Sounds on Take-over Behavior from Automated to Manual Driving  
Akihiro Abe · Yoko Kato · Michiaki Sekine (NALTEC)  
Ryo Hayamizu · Takeshi Toi (Chuo University)
- 069 Effects of Interface Modality of Video Viewing during Automated Driving on Takeover Performance from Automated Driving to Manual Driving  
Hideyuki Tanaka · Tatsuru Daimon (Keio University)  
Nobuyuki Ichikawa · Yodai Yamazaki · Takaaki Yasuta (East Nippon Expressway)
- 070 Development of Stowable Steering Column for Improved Cockpit Comfort  
Ryoichi Tokioka · Yasuyuki Nozawa · Takeshi Watanabe · Yoshihiro Oono · Kenichi Aota (JTEKT)

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[9:30-11:35]

## 103 Thermal and Fluid Technologies I -Cooling, Air Conditioning-

Satoshi Someya (AIST)

- 071 Evaluation Method of Equivalent Temperature for Cabin Thermal Comfort Design using 1D-CAE  
Ryota Kondo · Hajime Oi · Akira Matsumoto · Katsuhiko Arai (Nissan Motor)
- 072 Prediction of the Performance of a Cooling System with a Multi-Channel Heat Sink using Numerical Analysis of Refrigerant Flow with Changing Phase  
Yoshihiro Kato (Toyota Central R&D Labs.)  
Taiki Mori (Toyota Industries)
- 073 Visualization of Three-Dimensional Flow Field of Cabin with Stereo PIV and Comparative Verification with CFD  
Kazuki Ito · Keigo Shimizu · Akira Togii · Yusuke Nakamura · Makoto Yoshida · Eiji Ukita · Minoru Inoue (Mazda)  
Takenori Hiraoka · Takuji Nakashima (Hiroshima University)

- 074 Optimization of Initial Velocity Distributions for Controlling Jet Mixing and Diffusion by Deep Reinforcement Learning  
Yasumasa Ito · Yusuke Hayashi (Nagoya University)  
Koji Iwano (Okayama University of Science)

- 075 Characteristics of Separation Vortices between Blades of Sirocco Fan  
Kosuke Seto (Nagoya University)  
Koji Iwano (Okayama University of Science)  
Yasumasa Ito (Nagoya University)  
Yasuhiko Sakai (Nagoya Industrial Science Research Institute)  
Sho Kosaka · Kenji Yoshida (DENSO)

[12:35-14:40]

## 104 Thermal and Fluid Technologies II -Aerodynamics-

Atsushi Miura (Suzuki Motor)

- 076 Effect of Slant Angle on Mechanism of Transition to Oscillatory Flow Around Ahmed Body  
Yusuke Atsumi · Suguru Shiratori · Itsuhei Kohri · Hideaki Nagano · Kenjiro Shimano (Tokyo City University)
- 077 Proposal of Concept Shape for Drastic Improvement of Aerodynamic Performance of Heavy-Duty Vehicles -Optimization of Cargo Bed Shape  
Tomoe Yamaguchi · Kakeru Toda · Shoma Okugawa · Ryosuke Kawano · Yuhei Higashiyama · Daisuke Kawano (Osaka Sangyo University)
- 078 Proposal of Concept Shape for Drastic Improvement of Aerodynamic Performance of Heavy-Duty Vehicles -Interaction of Cab Shape and Cargo Bed Shape  
Kakeru Toda · Shoma Okugawa · Ryosuke Kawano · Yuhei Higashiyama · Tomoe Yamaguchi · Daisuke Kawano (Osaka Sangyo University)
- 079 A Study on the Vehicle Aerodynamics for Reducing Busy Steering under the Crosswind  
Shinichi Fujigaya · Kenta Kurosu · Shingo Tanaka · Keichi Taniguchi · Takashi Kamiyama (Nissan Motor)
- 080 Influence of Vehicle Dynamics Caused by Hysteresis of Aerodynamic Forces during Transient Change of Yaw Angle  
Shohei Imagawa · Keigo Shimizu · Yusuke Nakamura (Mazda)  
Takenori Hiraoka · Takuji Nakashima (Hiroshima University)

[15:20-17:00]

## 105 Thermal and Fluid Technologies III -Aerodynamics-

Akiyoshi Iida (ToyoHashi University of Technology)

- 081** Water Evaporation CFD Method with a Meshfree Collocation Approach for Wet Automotive Component Dry-out Time Prediction  
Junghoon Lee (Technical University of Munich)  
Dirk Baeder (AUDI)  
Sebastian Rehfeldt · Harald Klein (Technical University of Munich)

# Oct. 11 (Wed.)

## International Conference Room

082 Establishment of Exterior Wind Noise Sound Prediction Method using CFD  
Yuta Ito · Mikio Wakamatsu · Shiro Yasuoka · Vinh Long Phan (Toyota Motor)

083 Predicting Vehicle Aerodynamics using a Machine Learning Model Based on Physics  
Masanobu Horie · Daiki Adachi · Yoshinori Tanimura (RICOS)

084 Graph Neural Network for Automotive Aerodynamic Drag Coefficient and Surface Pressure Distribution Prediction  
Daisuke Umehara (Honda Motor)  
Masakazu Inoue · Kazuma Tani · Hiroaki Fukumoto (Araya)  
Yoshimichi Ono · Kenta Inada · Kenta Ogawa (Honda Motor)

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[9:30-11:10]

106 Automated Driving and Advanced Driver Assistance I  
-Environmental Recognition and Localization-  
Shin Kato (AIST)

085 Datasets and Task Considerations for Developing Robust and Accurate Velocity Recognition of Leading Vehicles  
Genya Ogawa · Toru Saito (SUBARU)  
Noriyuki Aoi (SIGNATE)

086 Traversability Estimation Based on Occupancy Grid for Autonomous Driving in Extreme Environments  
Yukiya Fukuda · Yuya Mii · Yuga Yano (Kyushu Institute of Technology)  
Hidenari Iwai · Shintaro Inoue (Toyota Motor)  
Hakaru Tamukoh (Kyushu Institute of Technology)

087 Improving Accuracy of Parking Vehicle Shape Estimation with Millimeter-Wave Radar by Applying Semi-Supervised Learning  
Tokihiko Akita (Toyota Technological Institute)

088 Research on Removal of Dynamic Objects in Point Cloud Maps (First Report)  
Motoki Hatsuda (Shibaura Institute of Technology)  
Toshio Ito (Shibaura Institute of Technology)  
/Hyper Digital Twins  
Toshiya Hirose (Shibaura Institute of Technology)

[9:30-11:10]

107 Automated Driving and Advanced Driver Assistance II  
-Technology for Development and Evaluation I-  
Toshiyuki Sugimachi (Tokyo City University)

089 Proposal for a Digital Twin Verification Platform for Mixed Pedestrian-Vehicle Spaces  
Kazunori Ban (Toyota Technical Development)  
Takuma Yamaguchi (Nagoya University)  
Eisuke Kobayashi · Ryo Wakisaka (Toyota Technical Development)  
Hiroyuki Okuda (Nagoya University)  
Chieko Nishizawa (Toyota Technical Development)  
Masae Kojima · Hirofumi Aoki · Toshiyuki Yamamoto · Tatsuya Suzuki (Nagoya University)

090 Study on the Influence of Car-Following Model Parameters on Traffic Flow in Microscopic Traffic Simulation  
Miho Fujishima · Kenji Komiya · Ryota Nakada · Koya Mori (Nippon Telegraph and Telephone)

091 Interaction and Decisions in Autonomous Vehicles -From a Safety and Ethical Perspective  
Masao Ito (NIL)

092 Architecture Definition to Secure Safety Zone for Automated Driving Vehicles  
Mingwei Gao · Hidekazu Nishimura (Keio University)

[12:10-13:50]

108 Automated Driving and Advanced Driver Assistance III  
-Unmanned Mobile Service Technology Development-  
Hiroyuki Okuda (Nagoya University)

093 Development of Vehicle System for Level 4 Autonomous Driving  
Taiki Kumi · Toru Higuchi · Michitoshi Azuma (Mitsubishi Electric)

094 Development of Autonomous Emergency Braking System for Level 4 Vehicles  
Hiroki Fujiyoshi · Mizuki Higuchi (Mitsubishi Electric)

095 Demonstration of Roadside Detection System for Roadside-to-Vehicle Cooperative Autonomous Driving in Eiheiji  
Yohei Kameyama · Tetsuro Nishioka · Genki Tanaka · Takuya Taniguchi (Mitsubishi Electric)

096 In-vehicle Safety Monitoring System in Autonomous Vehicles using In-Vehicle Devices  
Shin Kato (Tokyo University of Science)  
Soya Kato (Tokyo University of Science/AIST)

## Oct. 11 (Wed.)

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[14:30-16:10]

109 Automated Driving and Advanced  
Driver Assistance IV  
-Vehicle-Infrastructure  
Coordination Technology-  
Masakazu Mukai (Kogakuin University)

097 Speed Planning for Pre-Merging Considering Predicted  
Trajectory of the Main Line Vehicles and Constraints of  
Vehicle Dynamics  
Yuki Yoshida · Kazuo Hitosugi · Mizuho Wakabayashi ·  
Yuta Takashima (Mitsubishi Electric)

098 Railroad Level Crossing Control using Mobile Phone  
Lines and Level Crossing Passage Assistance System  
for Automobiles  
Kimihiko Nakano · Nijiro Fukushima · Bo Yang ·  
Zheng Wang · Xutao Mei (The University of Tokyo)  
Tetsuya Takata · Hiroyuki Nagasawa  
(Kyosan Electronic Manufacturing)

099 Research on Social Implementation of Automated Valet  
Parking System using a Cooperative System  
Naozumi Okada · Manabu Umeda · Keisuke Shimono ·  
Shoichi Suzuki · Yoshihiro Suda  
(The University of Tokyo)

100 Research on Self-Location Estimation using  
Omnidirectional Camera for Automated Driving  
Cooperating with Infrastructure System  
Ren Saito · Toshiya Hirose  
(Shibaura Institute of Technology)  
Toshio Ito (Shibaura Institute of Technology  
/Hyper Digital Twins)

# Oct. 12 (Thu.)

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[9:30-11:10]

## 110 Vehicle Development III

Yasufumi Sekine (Fukuyama University)

- 101 Accelerating Simulation Time in Plant Models for Hardware-in-the-Loop Simulation: Process and Methodology  
Yasuhiro Doi (Mazda)  
Yosuke Ogata (SIEMENS)  
Hiroki Makimoto (Mazda)  
Paihui Lin (SIEMENS)  
Satoshi Komori (Mazda)
- 102 AI Driven Battery Health Monitoring, Anomaly Detection and Lifetime Prediction for Enhanced Electric Vehicle Performance  
Nikolaus Keuth · Gerhard Schagerl (AVL List)
- 103 A Study on the Development of Column Rotary Type SBW  
Heeen Zoo · Kiyoun Song · Doyeon Won (Hyundai Motor)
- 104 SILS/HILS Integrated Test Cases Management and Automated Testing Method  
-The Best Practice of SILS/HILS Common Test Cases Development  
Hojin Jy · Yoojung Jung · Hyunji Kim · Beomseop Kim (Hyundai-Autoever)

[12:10-14:15]

## 111 Car Structure

Toshiaki Sakurai  
(former Iwaki Meisei University)

- 105 Experimental Verification of a Large 3D Variable-Axis CFRP-Aluminum Composite Structure Targeting a Full-Scale Monocoque Frame  
Yoshihiro Iwano (Toyota Motor)  
Masaaki Tanaka (Toyota Customizing & Development)  
Isao Ohashi (TISM)  
Kazuhiko Umemoto · Atsushi Kawamoto · Tsuyoshi Nomura (Toyota Central R&D Labs.)
- 106 Prediction Method of Compatibility between Ride Comfort and Load of Off-Road Vehicles using Bayesian Active Learning  
Hiroaki Kawamura · Misuzu Haruki · Hiroyuki Toyoda · Kohei Shintani (Toyota Motor)
- 107 Study of Structural Design Method using Both Topology Optimization and Shape Optimization  
Akihito Takeda (SCSK Minor Solutions)  
Shinichi Maruyama · Shinji Nishiwaki · Kazuhiro Izui (Kyoto University)  
Hiroshi Koizumi (Mizuho Research & Technologies)
- 108 Advancement in Corrosion Environment Prediction by Chipping Simulation  
Satoshi Maruyama · Soma Tahata · Hiroshi Ishida · Shuhei Tsumura · Toshihiro Yoshida · Takakazu Yamane · Yasunari Fujita · Ichirou Kyubun · Shinya Ishizaki (Mazda)
- 109 Study of PBV Platform Durability Target Cascading Process based on Concept Models  
Hongkyoung Seong (Hyundai Motor)

133+134

[9:30-11:35]

## 112 Organic and Polymer Materials I

Kotaro Tanaka (Honda R&D)

- 110 Predictive Modeling Study on Adhesion Mechanism of Metal Plating on Resin  
-Adhesion of Chrome Plating on ABS Resin  
Masahiro Nakamura · Kentaro Ichiki (Toyota Motor)  
Tomoki Watanabe · Yusuke Kimata (Tokai Rika)
- 111 Development of the High Impact Resistance Metallic Pre-Colored Resin  
Takuya Iwasaki (Suzuki Motor)
- 112 Shorten Fatigue Test Periods in Polymer Composites Employing Machine Learning  
Takeo Shibano (Hino Motors)
- 113 Rapid Determination of Fatigue Strength of C-SMC using Thermoelastic Temperature Variations  
Atsushi Akai (Toyota Central R&D Labs./Kyoto University of Education)  
Yasumoto Sato (Toyota Central R&D Labs.)  
Yukihiro Hamada · Atsushi Mikuni (Toyota Motor)
- 114 Development of Non-noble-metal CO<sub>2</sub> Methanation Catalyst  
-Catalyst Improvement Focusing on Support Effect  
Yusaku Onochi · Masahiko Takeuchi · Akira Kato (Toyota Motor)

[12:35-14:40]

## 113 Organic and Polymer Materials II

Nobuyoshi Kajioka (Mazda)

- 115 A Study on Radar Transmittance Characteristics of Painted Bumpers for Advanced Driver-Assistance Systems (ADAS)  
Daisuke Sano · Masuo Kondo (Honda R&D)  
Erina Kobayashi (Honda Motor)  
Miho Ishii (Honda R&D)
- 116 Electromagnetic Shielding and Mechanical Properties of FRP with Carbon Fiber and Metal Fiber Non-Woven Fabrics  
Hiroshi Fujita · Akio Ohtani (Kyoto Institute of Technology)  
Masaya Matsushita (Yuho)
- 117 Analysis of Crushing Characteristics for Carbon Fiber Reinforced Thermoplastic Pipes with Crystalline Resins  
Keisuke Takamura · Asami Nakai (Gifu University)
- 118 High Accuracy of Numerical Analysis for Predicting Torsional Stiffness of Carbon Fiber Monocoque for Student Formula Cars  
Tetsuya Yamamoto · Aruku Nakada · Hiroyuki Moriyama · Hideaki Kato · Takayoshi Narita (Tokai University)
- 119 Weight Reduction of Rally Cars using Composite Materials  
Akio Ohtani · Hiroshi Fujita (Kyoto Institute of Technology)  
Masaya Matsushita (Yuho)  
Tadahiro Hiratsuka (Smash)  
Osamu Fukunaga (Osamu Factory)  
Yasumasa Komaki (Society of Automotive Composites)  
Asami Nakai (Gifu University)

# Oct. 12 (Thu.)

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[9:30-11:35]

## 114 Dynamics, Control and Safety of Two-wheeled Vehicles I Junji Hirasawa (Ibaraki National College of Technology)

- 120 Consideration of Vehicle Design Variables on Self-Excited Vibration  
Hideki Sakai (Kindai University)
- 121 Analysis of Weave Mode Stability by means of Eigen Vector Equation  
Ayaka Gyotoku · Reiya Haraoka · Takahiko Yoshino · Tsuyoshi Katayama (Kurume Institute of Technology)
- 122 Analysis of the Effect of Aerodynamic Characteristics on Weave Mode  
Reiya Haraoka · Ayaka Gyotoku · Takahiko Yoshino · Tsuyoshi Katayama (Kurume Institute of Technology)
- 123 Stability Analysis of Motorcycle Weave Mode by 10 Degree of Frame Flexibility Model  
Tsuyoshi Katayama · Takahiko Yoshino (Kurume Institute of Technology)
- 124 Study on Motorcycle Rider Model using Reinforcement Learning  
-Basic Research to Represent the Behavior according to the Rider Proficiency  
Yasuhiro Mitsuhashi · Hitoshi Takeshita (The MathWorks GK)  
Yoshitaka Momiyama · Noboru Yabe (Yamaha Motor)

[12:35-15:15]

## 115 Low Gas Emissions Kyohei Yamaguchi (Kokushikan University)

- 125 Analysis of NOx Purification Performance of Urea SCR Catalyst during Actual Road Driving by Heavy-Duty Vehicle Exhaust Gas Measurement System using NOx Sensor  
Toshiro Yamamoto (NALTEC)
- 126 The Scenarios for ZEV Introduction to Achieve Carbon Neutrality by 2050 in Japan  
Keibun Mori · Takao Nakayama · Kazunori Nagamine · Yuki Fukuda (Deloitte Tohmatsu Consulting)
- 127 Redox Characteristics with Three-Way Catalyst Porous Particle Membrane Filter  
Naoya Okamura · Phyozin Koko · Katsunori Hanamura (Tokyo Institute of Technology)
- 128 Construction of Real-Driving Emissions Prediction Model for Traffic Flow Simulator  
Ryota Ishida · Susumu Sato (Tokyo Institute of Technology)
- 129 New Generation Diesel Particulate Filter for Future Euro7 Regulation  
Yohei Mitsui · Yuta Nakagoshi · Kazuya Mori · Katsunori Tanaka · Yasuyuki Furuta · Takashi Aoki (NGK Insulators)

- 130 Analysis of the Impact of Traffic Environment on Driving Behavior under Real-World Driving Conditions  
Kotaro Imamura · Susumu Sato (Tokyo Institute of Technology)  
Yusuke Ida · Yudai Yamasaki (The University of Tokyo)

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[9:30-11:35]

## 116 Improving engine efficiency Koji Kikuhara (Waseda University)

- 131 Right-Sizing Concept for Improving Thermal Efficiency of Diesel Engine at Partial Load (First Report)  
-Engine Concept Construction using Simulation and Prototype Demonstration  
Nobumasa Ohashi · Hikaru Ito · Takayuki Furukawa · Kazuhiro Enoki · Naoya Ishikawa (Isuzu Advanced Engineering Center)
- 132 Right-Sizing Concept for Improving Thermal Efficiency of Diesel Engine at Partial Load (Second Report)  
-Demonstration of Concept by Simultaneous Improvement in Indicated Thermal Efficiency and Friction Loss  
Nobumasa Ohashi · Hikaru Ito · Takayuki Furukawa · Kazuhiro Enoki · Naoya Ishikawa (Isuzu Advanced Engineering Center)
- 133 Right-Sizing Concept for Improving Thermal Efficiency of Diesel Engine at Partial Load (Third Report)  
-Consideration of Mixed Lubrication Analysis and Friction Reduction of Engine Bearings using EHD Calculation  
Hiroki Takata · Mitsutoshi Fukuda · Yuichiro Kajiki · Kenji Watanabe (Taiho Kogyo)  
Nobumasa Ohashi · Hikaru Ito · Naoya Ishikawa (Isuzu Advanced Engineering Center)
- 134 Development of Alloy-Saving High Strength Bolt for Multi-Link Type Engine  
Daiki Sekine · Mitsushi Oyanagi · Takahiro Hamada · Takayoshi Furukawa (Nissan Motor)  
Yosuke Matsumoto (Kobe Steel)  
Shinji Kano (Saga Tekkosho)
- 135 Development of Si-Added 1600MPa Class Low-Alloy High-Strength Steel for Bolts  
Yosuke Matsumoto · Tatsunori Uchida · Takayuki Yasui · Makoto Kawamori · Yuya Murata (Kobe Steel)

[12:35-13:50]

## 117 Driver Workload Kazumasa Onda (Suzuki Motor)

- 136 Comparison of Driver's Workload Reduction Effect in Different Driver Assistance Systems  
Takemi Tsukada · Kentaro Kasuya · Hiroyasu Kubota · Shuichi Okada (Honda Motor)  
Yukiyo Kuriyagawa · Motonori Ishibashi (Nihon University)

# Oct. 12 (Thu.)

137 Concisely Measuring Cognitive Workload of the Interactive User Interface: A Preliminary Study  
Hiroshi Kishi · Hirofumi Aoki (Nagoya University)

138 Study on Recognitive Load of 3D Camera Image for Vehicle (Second Report)  
-The Difference Based on Individual Characteristics  
Shiho Matsushita · Ayaka Shimizu · Motoki Yaginuma (Nissan Motor)

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[9:30-11:35]

## 118 Motor Drive System

Osamu Shimizu (The University of Tokyo)

139 Optimization of Speed Change Pattern for Improving Electricity Consumption of Electric Heavy-Duty Vehicles and Verification through Actual Vehicle Chassis Dynamometer Testing  
Yiyuan Fang · Shih-Hao Huang · Kimiyoshi Kobayashi · Wei-Hsiang Yang · Yushi Kamiya (Waseda University)

140 The Influence of Lubricant Properties on the Efficiency and Cooling of Electric Transaxle (e-Axle)  
Takashi Yanagihara · Yuki Okada · Daisuke Takekawa (Idemitsu Kosan)

141 Evaluation of Repulsive Force of Rotor Core in IPM Motor by Electromagnetics-Structure Interaction Analysis  
Takuto Kobayashi (University of Yamanashi)  
Yoshiyuki Nagasaki · Yusuke Okada (Aisin Digital Engineering)  
Yuki Nagasaka (University of Yamanashi)  
Yuta Yokoyama (University of Yamanashi/Diver Technology)  
Hirofumi Sugiyama (University of Yamanashi)  
Shigenobu Okazawa (University of Yamanashi/Diver Technology)

142 A Development of a Small Size Magnetic Field Sensor to Evaluate EMF Exposure  
Mikiko Suzuki · Toshio Watari · Kenichi Ichinose · Keishi Miwa (Toyota Motor)  
Masanori Ishii (AIST)

143 Thermal Design Method of DC Capacitor for 4WD xEV which is Considered the Resonance Current between Inverters for Front and Rear Wheel Drive  
Shinya Komasaki · Keita Abe · Naoaki Oikawa (Nissan Motor)

[12:35-14:40]

## 119 Charging System

Osamu Shimizu (The University of Tokyo)

144 Feasibility Study of Onboard PV for Commercial Vehicle Application  
-Analysis on Energy Consumption Reduction Based on Field Test of EV Community Bus  
Shuai Pei · Jingxuan Peng · Toshio Hirota · Yushi Kamiya (Waseda University)  
Hidenori Mizuno · Takashi Ohzeki (AIST)

145 Battery Charging Control of Series Hybrid Electric Vehicle using Short-Trip Time Prediction Model Based on Real-World Driving Data Analysis  
Norifumi Mizushima (AIST)  
Akira Sato (Former Chiba University)  
Tatsuya Kuboyama (Chiba University)  
Yasuo Moriyoshi (Sustainable Engine Research Center (SERC) /Chiba University)

146 Study of 150kW Dynamic Wireless Power Transfer  
Jin Katsuya (Honda R&D)

147 Study of Electromagnetic Fields Disturbance on Dynamic Wireless Power Transfer Systems in Passenger Cars  
Tsutomu Kamiyamaguchi · Jin Katsuya (Honda R&D)

148 Forecasting Model Analysis on Battery Electric Vehicle Penetration Based on Charging Scheme  
Yuta Kobayashi · Keita Miyawaki · Shoi Koshikawa · Eriko Matsumura · Jiro Senda (Doshisha University)

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[13:00-15:05]

## 120 Noise, Vibration, and Ride Quality I

Kazuhito Misaji (Nihon University)

149 Principal Component Contribution Analysis Method at Vehicle Operational Condition through Separated Measurement and Integration Processing  
-Operational TPA using Master and Slave Measurements  
Junji Yoshida · Toki Miyaishi (Osaka Institute of Technology)

150 Transfer Path Analysis using Unit Mode  
Takafumi Mochizuki · Hiroyuki Suzuki · Kazuki Hidaka · Moe Hanashima (Estech)

151 Analysis of Tire Tread Vibration using SEA  
Tomohide Murayama · Emi Ueda · Shun Horiuchi · Shoji Takata · Tatsuya Sasaki (Sumitomo Rubber Industries)  
Katsuhiko Kuroda (Nagasaki Institute of Applied Science)

152 Development of Operational Tire-Suspension Contact Force Analysis using Frequency based Substructuring  
Yuko Tamei · Masaki Shiraishi · Ryota Tamada (Sumitomo Rubber Industries)

153 Machine Learning-Based Method of Determining Target Characteristics for Road Noise Reduction (First Report)  
-Construction of The Machine Learning Model Capable for Determining Wideband Frequency Characteristics  
Kei Ichikawa · Jun Tsutsumi · Yuta Shimamura (Honda Motor)  
Koji Tachioka · Hiromichi Ebisawa (Estech)

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[9:30-11:10]

## 121 Elderly Driver/Elderly Pedestrian Minoru Makiguchi (Toyota Motor)

- 154 Methods to Promote Safe Driving through Metacognition and Compensatory Behavior  
Sora Ikemoto · Takanao Kamidi (Kagawa University)  
Emiko Yoshida (Kagawa University/Aioi Nissay Dowa Insurance)  
Keisuke Suzuki (Kagawa University)
- 155 What Driving Characteristics Affect the Intention to Use Advanced Safety Vehicle of Elderly Drivers -Using the Simplified Questionnaire Comprehensively Captures Driving Characteristics (SQ-CCDC) for Elderly Drivers  
Yasuhide Nishihori (Osaka Institute of Technology)  
Masae Kojima (Nagoya University)  
Kojiro Matsuo (Toyohashi University of Technology)
- 156 Individual Differences in Multitasking Performance during Driving among Elderly Drivers  
Yukiko Nishizaki (Kyoto Institute of Technology)
- 157 Analysis and Modeling Study of Elderly and Non-Elderly Pedestrian Actions at Un-Signalized Crosswalk  
Chieko Nishizawa · Kazunori Ban (Toyota Technical Development)  
Masae Kojima · Hirofumi Aoki (Nagoya University)

[12:10-13:50]

## 122 Driver Behavior/Cyclist Behavior Toshihiro Hiraoka (Japan Automobile Research Institute)

- 158 Study on Characteristics Extraction of Driving Behavior in Response to Hazardous Events under Real Traffic Situations  
Masao Nakagawa · Yuki Manabe (NALTEC)
- 159 Study on Sensor Performance Requirement Definition by Driving Behavior Analysis of Merging Scene  
Yoshiaki Obana · Yuki Onoue · Toshio Ito (Shibaura Institute of Technology)  
Takuji Morimoto · Taku Umeda (Mitsubishi Electric)  
Toshiya Hirose (Shibaura Institute of Technology)
- 160 Model Parameter Validation and Dynamic Performance Evaluation in a Bicycle Simulator  
Takuya Koide · Takuma Yamaguchi · Hiroyuki Okuda · Tatsuya Suzuki (Nagoya University)  
Ryo Wakisaka · Kazunori Ban (Toyota Technical Development)
- 161 Construction of a Cyclists' Decision-Making Model at Un-Signalized Intersections in Left-Turn Situations  
Ryo Wakisaka · Kazunori Ban (Toyota Technical Development)  
Takuma Yamaguchi · Hiroyuki Okuda · Tatsuya Suzuki (Nagoya University)

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[9:30-12:10]

## 123 Automated Driving and Advanced Driver Assistance V -Vehicle Control and Remote Operation- Manabu Omae (Keio University)

- 162 Re-Evaluation of Robust Steering Control Law by Combination of Model Matching and Optimal Observer to LPV Plant Model  
Toshio Ohta · Hajime Horie · Kenji Takahata (Hiroshima Institute of Technology)  
Morio Takahama (Formerly Nagoya University)
- 163 Reward Design in Reinforcement Learning for Urban Autonomous Driving  
Katsuo Semmyo · Wei-Fen Hsieh · Shin Sakamoto · Masahiko Watanabe (NTT DATA Automobiligence Research Center)
- 164 Evaluation of the Effect of Communication Latency on Drivability and Clarification of Communication Latency Requirements in Remote Driving System  
Kosuke Akatsuka · Rio Suda · Hirofumi Momose (Toyota Motor)
- 165 Research on Tele-Operation Support System that Indicates Moving Position by Camera Image  
Yuu Miyajima (AIST/Tokyo University of Science)  
Shin Kato (AIST)  
Makoto Itami (Tokyo University of Science)
- 166 Evaluation Method of Vehicle Control Performance using Linear Quadratic Regulator and Its Sensitivity Analysis  
Ryo Mikami · Yuta Kuwabara · Yu Cao · Takahiro Kawaguchi · Seiji Hashimoto (Gunma University)  
Tsutomu Iwase (Gunma University/SUBARU)  
Natsumi Komiyama · Taiki Sugiyama · Yuuichirou Tsukasaki (SUBARU)
- 167 Lane-Change System using Model Predictive Control to Realize Human-Like Decision Making  
Kenta Tominaga · Tomoki Uno · Mizuho Wakabayashi (Mitsubishi Electric)

[13:10-14:50]

## 124 Automated Driving and Advanced Driver Assistance VI -Technology for Development and Evaluation II- Takeki Ogitsu (Gunma University)

- 168 Consistency Verification of Signal Processing for Long-Range Radar using Physical Sensor Model and Simulation Platform (First Report)  
Tadashi Naito · Miyo Okamoto · Ryuta Okamura · Kenichi Nukihara (Continental Autonomous Mobility Japan)



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- 169 Development of an Artificial Weather Chamber That Reproduces a Dynamic Weather Environment for Autonomous Driving Sensors  
Haruki Seto · Hiroyuki Enoki · Hirokazu Tanaka  
(Espec)
- 170 Application of Open Data in Building Scenes of the Autonomous Driving Simulation  
Kiddo Mokutani · Tatsuya Ichikawa · Kengo Asada · Yuichi Matsuo  
(Tokyo University of Science)
- 171** A Study on the Usability of Large-Screen Display using Module based Cockpit Prototype  
Daniel Seunggho Jeong · Jong Yong Nam · In Seong Park · Keun Sang Wu · Young Seok Jo  
(Hyundai Motor)

# Oct. 13 (Fri.)

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[9:30-11:35]

## 125 Crash Safety

Daisuke Ito (Kansai University)

- 172 Toward the Spread of Cars with High Safety Performance  
Seiya Tatsuno · Ayumi Shinohara · Tadafumi Shima · Kaoru Kouchi (MLIT)
- 173 Kinematic Behavior and Injury Risk of Children in Car Rear-End Collisions with Bicycles Equipped with Child Seats (1st Report)  
Takaaki Terashima  
(National Research Institute of Police Science /Nagoya University)  
Ryo Oga · Kenshiro Kato · Akihiro Kido  
(National Research Institute of Police Science)  
Koji Mizuno (Nagoya University)
- 174 Kinematic Behavior and Injury Risk of Children in Car Rear-End Collisions with Bicycles Equipped with Child Seats (2nd Report)  
-Finite Element Analysis  
Ryuga Miyata (Nagoya University)  
Takaaki Terashima (Nagoya University /National Research Institute of Police Science)  
Yuqing Zhao · Koji Mizuno (Nagoya University)
- 175 Research of the Pedestrian Head Protection Test for the Windshield  
Yoshinori Tanaka · Naruyuki Hosokawa · Yasuhiro Matsui (NALTEC)
- 176 Increase of Joint Range of Motion in THUMS for Application to Various Occupant Postures in a Crash  
Yojiro Iizuka · Hiroshi Miyazaki · Shigeki Hayashi · Yuji Nakane (Toyota Motor)

[12:35-14:15]

## 126 Injury Prediction Algorithm

Koji Mizuno (Nagoya University)

- 177 Construction of Prediction Model for Brain Strain Waveforms in Vehicle Crash Tests using Deep Learning  
Shuntaro Tamai · Yusuke Miyazaki  
(Tokyo Institute of Technology)
- 178 Injury Probability Prediction Modeling using Decision Tree-Based Machine Learning Models  
Tsubasa Miyazaki · Yusuke Miyazaki  
(Tokyo Institute of Technology)  
Koji Kitamura (AIST)  
Fusako Sato (JARI)
- 179 Development of New Injury Prediction Algorithms for Pedestrians and Cyclists Considering Minor Injuries, Serious Injuries and Fatalities  
Tetsuya Nishimoto · Kosuke Nagai (Nihon University)  
Yasushi Nagaoka · Masayuki Shirakawa  
(Toyota Motor)
- 180 Construction of Injury Prediction Models for Vehicle Occupants Based on Video-Recorded Drive Recorder Information  
Kaede Yabugami · Yusuke Miyazaki  
(Tokyo Institute of Technology)  
Koji Kitamura (AIST)  
Fusako Sato (JARI)

[14:55-17:35]

## 127 Accident Investigation

Hiroshi Kuniyuki (Suwa University of Science)

- 181 Study of Traffic Accident Analysis Involving Garbage Trucks  
Toru Kiuchi · Tatsuya Ito · Eiko Kagesawa  
(Institute for Traffic Accident Research and Data Analysis)
- 182 An Analysis of Characteristics of Law Violations Caused by Elderly Drivers in Single Vehicle Accidents  
-An Analysis from 3 Perspectives: Fatal or Serious Injury Rate, Distribution Rate, and Magnification Ratio  
Yasufumi Sekine (Fukuyama University)
- 183 Analysis of Crossing Incidents at Intersections with Motorcycles using Near-Miss Database  
Taiga Suzuki · Keisuke Kazama · Yoshitaka Marumo  
(Nihon University)  
Hiroshi Mouri  
(Tokyo University of Agriculture and Technology)
- 184 Five-Year Transitional Evaluation and Resolution of the SIP Traffic Accident Classifications  
Toru Kiuchi · Satoko Ito · Eiko Kagesawa  
(Institute for Traffic Accident Research and Data Analysis)
- 185 Study on a Method for Reconstructing Pre-Crash Situation by Combining the Data of Event Data Recorders (EDR) and Images of Drive Recorders in Traffic Accident Investigation  
Motoki Sugiyama  
(Institute for Traffic Accident Research and Data Analysis)  
Hideki Matsumura  
(Institute for Traffic Accident Research and Data Analysis/NTSEL)
- 186 Studies on the Advanced Emergency Braking System (AEBS) Effect in Truck Collisions Attributed to Falling Asleep at the Wheel  
Kengo Kawaguchi · Hajime Kumagai · Hiroyuki Sawatari · Mitsuo Hayashi · Toshiaki Shiomi  
(Hiroshima University)

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[9:30-10:45]

## 128 Production, Manufacturing

Toshio Takenaka (Isuzu Motors)

- 187 Inverse Analysis of Critical Damage Value Distribution for Integral-Type Ductile Fracture Prediction Model in Tailor Welded Blanks  
Fuka Minami (Futaba Industrial)  
Masao Miyoshi (Gifu University)  
Kazuhiro Kawakita (Futaba Industrial)  
Yoshinori Yoshida (Gifu University)

# Oct. 13 (Fri.)

**188** Developing Equipment Condition Prediction and Monitoring System using Deep Learning Models in Automotive Production Factory  
Deog Hyeon Kim · Gun Sik Kim · Jung Ho Nam · Ju Heon Hwang · Jin Woo Park (Hyundai Motor)

**189** Smart Factory Logistics Robot Operation Optimization Control Technology  
-Traffic Minimization & Robot Operation Control Technology for Efficient Operation of AMR-based Logistics Process for HMC&KIA Standard Specification  
Kyung Dong Park · Man Ki Lee · Gye Woon Ahn · Joo Han Kim · Young Jin Jeong · Sang Won Yoon · Seung Hyun Kim · Dae Hyun Kim · Beom Joon Lee (Hyundai Motor)

[11:45-13:50]

**129 Driver Perception/Cognition**  
Shiho Matsushita (Nissan Motor)

190 Study of the Dynamic Visual Acuity under Whole-Body Vibration (First Report)  
-Evaluation of Visual Acuity Based on Head Motion and Ocular Movement Measurements  
Toshiyuki Taguchi · Masateru Amano · Hiroyuki Yamaguchi · Aya Kubota · Yuji Muragishi (Toyota Central R&D Labs.)

191 Study of the Dynamic Visual Acuity under the Whole-Body Vibration (Second Report)  
-Mathematical Model for Retinal Slip and Eye Movement under Whole-Body Vibration  
Masateru Amano · Hiroyuki Yamaguchi · Yuji Muragishi · Aya Kubota · Toshiyuki Taguchi (Toyota Central R&D Labs.)

192 Investigating the Effect of the Front Pillar Blind Spots on Driving Behavior  
Yuto Takei · Shinya Okamoto · Hisato Fukuda (Gunma University)  
Toshihiko Kozai · Tsutomu Iwase (Gunma University/SUBARU)  
Kenichi Sato · Shigeyuki Kato · Noriyoshi Matsuo (SUBARU)

193 Analysis of Driver's Predictive Characteristics using Eye Tracking and a Deep Learning Model that Mimics Human Vision (Second Report)  
Masataka Kato · Takaaki Seki · Mizuki Amamiya · Yucheng Zhang · Koichi Emura (Panasonic Automotive Systems)  
Eiji Watanabe (National Institute for Basic Biology, National Institutes of Natural Sciences)

194 Examining Alerts using Target Framing to Promote Cautious Driving Behavior  
Hiroataka Yamamoto · Yukiko Nishizaki (Kyoto Institute of Technology)

[14:30-16:10]

**130 Crash Safety Structure**  
Toshiaki Sakurai (Tokyo City University)

195 Prediction of Energy Absorption Properties of B-Pillar Three-Point Bending using Deep Learning  
Kaori Suzuki · Tsuyoshi Nishihara · Eri Kaiki (Mazda)

196 Proposed Impact Performance Design Method Based on Energy Propagation  
-In the Case of Dynamic Progressive Buckling  
Xin Yuan · Kai Kurihara · Toru Yamazaki (Kanagawa University)

197 Development of Method to Predict Deformed Shape of a Side Impact Collision by Machine Learning Considering Multilayer Shell Mesh Structure  
Mashio Taniguchi · Tomohito Sono · Hiroaki Onodera · Kosho Kawahara (Toyota Motor)

198 Out-of-Plane Deformation Behavior in Isogeometric Shell Structural Analysis  
Mizuki Hoshino (University of Yamanashi)  
Kazuya Yamauchi · Kosuke Kojima (Mazda)  
Hozumi Oshika · Ki-ichi Furuhashi (University of Yamanashi)  
Yuta Yokoyama (University of Yamanashi/ Diver Technology)  
Hirofumi Sugiyama (University of Yamanashi)  
Shigenobu Okazawa (University of Yamanashi/ Diver Technology)

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**131 Pedal Operation of Elderly Drivers**  
Motoki Shino  
(Tokyo Institute of Technology)

199 Analysis of Accident Statistics Data Aimed at Mitigating Injuries Caused by Pedal Misapplication among Elderly People  
Yoko Kato · Akihiro Abe · Michiaki Sekine · Yasuhiro Matsui (NALTEC)

200 Age-Related Changes in Pedal Operation Characteristics and Effects on Driving Behavior (1st Report)  
-Study on the Relationship between Pedal Operation Ability in Bench Experiments and Stop Sign Intersection Crossing Behavior on Test Vehicle  
Machiko Hiramatsu · Akihiko Ebina · Tsutomu Kawano · Hidenori Seguchi · Tuyoshi Sakuma (Nissan Motor)

201 Age-Related Changes in Pedal Operation Characteristics and Effects on Driving Behavior (2nd Report)  
-Study on Effects on Basic Maneuvering, Intersection Right-Turning and Parking Behavior on Test Vehicle  
Akihiko Ebina · Machiko Hiramatsu · Tsutomu Kawano · Hidenori Seguchi · Tsuyoshi Sakuma (Nissan Motor)

202 Considerations using Inverse Dynamics Analysis of the Characteristics of Braking Force and Leg-Movements during Emergency Brake Operation in Different Seating Postures of Elderly People  
Shuhei Kubo (Terrabyte)  
Masashi Makita (Teikyo University)  
Akinari Hirao (Shibaura Institute of Technology)  
Hiroaki Fujii (Fukuyama Heisei University)  
Daisuke Taguchi (Teikyo University)  
Hiroshi Kuniyuki (Suwa University of Science)  
Yuta Tokunaga (Terrabyte)

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- 203 An Attempt to Reduce Pedal Operation Errors by Improving Walking Ability of Elderly Drivers  
Takashi Hosokawa · Takashi Tagawa (JARI)  
Machiko Hiramatsu · Hiroyuki Mae (JAMA)  
Yasuhiro Suzuki (University of Tsukuba Hospital)  
Yukiyo Shimizu · Yasushi Hada · Masao Koda (University of Tsukuba)

[12:35-13:50]

**132 Driver's Posture/Driving Comfort**  
Akinari Hirao  
(Shibaura Institute of Technology)

- 204 Analysis and Validation of Seat Factors for Fatigue Reduction using a Musculoskeletal Simulator  
Ryotarou Yoshida · Shinya Okamoto · Hisato Fukuda (Gunma University)  
Tsutomu Iwase · Toshihiko Kozai (Gunma University/SUBARU)  
Nobuaki Nakazawa (Gunma University)  
Masaaki Sakamoto (Takasaki University of Health and Welfare)  
Shunpei Nakamura · Kyohei Uchikata · Masami Handa (SUBARU)
- 205 Estimation of Driver Fatigue by Assessing Seated Postural Fluctuation using XZ Dispersion Diagram  
Yutaka Yoshida · Emi Yuda (Tohoku University)
- 206 An Objective Method for Motion Sickness Evaluation  
Yuto Korogi · Masanori Tsuzuki · Ryuichi Nakanishi · Kazuaki Obara · Shinya Ohira · Katsunori Yamada · Yasushi Donoue (Toyota Motor)

[14:30-17:10]

**133 Driver Sensitivity/Physiology**  
Yukiyo Kuriyagawa (Nihon University)

- 207 Proposal of Japanese Version of Karolinska Sleepiness Scale Conforming to European Union Law  
Yuji Uchiyama (Toyota Central R&D Labs.)  
Kiyofumi Nakajima (Toyota Motor)
- 208** A Study on Expansion of User Experience in the Vehicle Space  
-Development of Interactive Bi-Directional Multi-Console  
Jae Yong Kim · Sin Gyu Kang · Keun Chul Lee (Hyundai Motor)
- 209 Assessing the Influence of Visual Response Delay and Driver Attributes on Perceived Driving Sensations  
Hisato Fukuda · Shinya Okamoto (Gunma University)  
Tsutomu Iwase (Gunma University/SUBARU)  
Naomichi Sawada · Keiji Tonogaki · Kazuto Hanawa (SUBARU)  
Kenji Tsuchiya (Nagano University of Health and Medicine)  
Senichiro Kikuchi (Gunma University)
- 210 Effects of Drivers' Trait Anxiety and State Anxiety on Driving Behavior  
Chihiro Shumiya · Yukiko Nishizaki (Kyoto Institute of Technology)

- 211 Evaluating Driver Irritation using Continuous Deep Body Temperature Measurement  
Yutaka Yoshida · Hiroaki Sakamoto · Emi Yuda (Tohoku University)
- 212 Estimation and Reduction of Driver's Frustration for Improving Safety  
Ken Kamiyotsumoto · Olivier Thorigne · Takahiro Fukushima (ALPS ALPINE)  
Keisuke Hirashima · Souta Takahashi (Tohoku University)  
Hideki Sakamoto (ALPS ALPINE)  
Emi Yuda · Motoaki Sugiura · Makoto Takahashi (Tohoku University)

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[9:30-11:35]

**134 Three Way Catalyst**  
Akira Iijima (Nihon University)

- 213** Optimization of High Porosity Substrate and GPF Based on Their Microstructures  
Sungmu Choi · Jiho Cho · Ohyoung Kwon (Hyundai Motor)
- 214 Experimental Investigation of the Effect of Absorbed Oxygen on the Improvement of Three-Way Catalyst Purification Performance by Perturbation  
Sota Aoyama · Jin Kusaka (Waseda University)
- 215 Research on Ammonia Emissions in Gasoline Passenger Cars with Three-Way Catalysts (2nd Report)  
-Analysis of NH<sub>3</sub> Emission during Engine Warming-up and Effect of Condensed Water to Measurement  
Akira Inoue · Hiroyuki Itoyama · Jin Yokoyama · Hideki Nomura (Nissan Motor)
- 216 Evaluation of Rh Surface State and Catalyst Light-Off Performance by XPS Analysis  
Hiroyuki Minokoshi · Daichi Tabuchi · Ryo Nagai · Hirokuni Fujiwara (SUBARU)  
Masaaki Haneda (Nagoya Institute of Technology)  
Hideto Yoshida (Osaka University)  
Masato Machida (Kumamoto University)
- 217 Study of NH<sub>3</sub> Formation Mechanism over Three-Way Catalysts Utilizing Multivariate Analysis  
Akito Demizu · Yasuhiro Matsumura · Hiroshi Yamada (Mazda)

[12:35-14:40]

**135 Post-Treatment System**  
Takayuki Fuyuto  
(Toyota Central R&D Labs.)

- 218** Numerical Analysis of Soot Trapping by the Three-Way Catalyst (TWC) Porous-Particle Membranes with Variable Pore Sizes  
Teerapat Suteerapongpun · Katsunori Hanamura (Tokyo Institute of Technology)

# Oct. 13 (Fri.)

- 219 Analyzing the Influence of Hydrothermal Degradation on NOx Purification in Diesel Exhaust Aftertreatment Systems  
Kohei Oka · Akiyoshi Shimizu · Sei Kamakura · Ayako Honya · Hisashi Ozawa · Naoya Ishikawa (Isuzu Advanced Engineering Center)
- 220 PIV-DDM Analysis of Injector Spray Droplets for Performance Prediction of Urea SCR System  
Rina Osada · Shotaro Nara · Naoki Sugiyama · Jyo Ono · Yuki Kawamoto · Naoya Fukushima · Shun Takahashi · Masayuki Ochiai · Tetsuo Nohara (Tokai University)  
 Kazuo Oosumi · Naoya Ishikawa (Isuzu Advanced Engineering Center)
- 221 High Cell Density Flow Through Substrate for New Exhaust Gas Regulation  
Hiroto Mikami · Hayaki Nakasumi · Etsuji Ohara · Kentaro Sugimoto (NGK Insulators)  
 Kyohei Kato · Akifumi Kawakami (NGK Automotive Ceramics USA)  
 Tsuyoshi Asako (NGK Insulators)  
 Anoop Reghunathan Nair (NGK Automotive Ceramics USA)  
 Christine Lambert · Eva Thanasiu (Ford Motor)
- 222 NOx Reduction/CO<sub>2</sub> Absorption Method in the Exhaust Gas by Low Energy Atomization Control  
Tetsuo Nohara · Hiroki Onoue · Joe Ono · Masayuki Ochiai (Tokai University)

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[9:30-12:10]

## 136 Engine Components, Lubricants, Tribology Akemi Ito (Tokyo City University)

- 223 Study of Sliding Mechanism in Mechanical Atkinson Cycle Engine  
Akihiro Iwabasama · Yoshihiro Okada · Ryo Sakaki · Keitaro Nakanishi · Junya Funatsu · Ryohei Ikutomo (Honda R&D)
- 224 Effect of Piston Stroke Characteristics on Performance of the Atkinson Cycle  
Keitaro Nakanishi · Kensuke Takahashi · Ko Shimizu (Honda R&D)
- 225 Study on Engine Friction and Vibration Reduction for Mechanical Atkinson Cycle Engine  
Yoshihiro Okada · Akihiro Iwabasama · Shogo Mizokami · Ryo Sakaki · Keitaro Nakanishi (Honda R&D)
- 226 Analysis of Additives in Engine Oil Degraded by NOx Bubbling at 80°C  
Toshimitsu Numata · Sawa Araki · Yuriko Fujii · Takanori Itoh · Masayuki Inaba · Kiyotaka Nakamura (Nissan ARC)
- 227 Development of AI Prediction Method for Piston Friction Mean Effective Pressure  
Keiichi Sugimoto · Wataru Sakurai · Kunihiro Kobayashi (Art Metal Mfg.)
- 228 Research on Prediction Method for Lubrication Limit of Sliding Bearings by EHD Analysis Considering the Progress of Wear  
Tomoya Hatta · Takafumi Jonishi · Yohei Morimoto (Yanmar Holdings)  
 Masayoshi Muraki (Shonan Institute of Technology)

[13:10-15:15]

## 137 Power Transmission Yasukazu Sato (Yokohama National University)

- 229 Auxiliary Brake Apparatus by Air Compression and Release for Stop of Heavy FCV Regenerative Brake (3rd Report)  
 -Optimization of Brake Power Control System for Multi-Cylinder Structure  
Toshinori Fujita · Ryo Yamaguchi · Chinatsu Sano · Yohei Toyono · Takashi Shibayama (Tokyo Denki University)
- 230 Development of Single Tooth Pinion Gear planetary gear mechanism to Achieve High Efficiency and High Speed Reduction  
Teppei Tokizaki · Motoaki Kobayashi · Yoshichika Kawashima · Toru Yumoto · Ryuichi Takakusagi · Yuzuru Masuyama (MITSUBA)
- 231 Mechanism of Vehicle Dynamics using Rear Wheel Speed-up System for AWD  
Susumu Ito · Yusuke Kakihara · Yuya Fujisawa · Tomohiro Shimizu · Minoru Suyama · Akira Ono · Masami Oguri · Yoshinobu Yamazaki · Yusuke Yabusaki · Chihiro Kai (SUBARU)
- 232 Vehicle Application Development of Fixed Constant Velocity Joint by Spherical Cross Groove Structure  
Seiji Takahashi · Takahiro Kuwabara (Nissan Motor)  
 Masashi Funahashi · Ritsuki Sakihara · Takuya Kato (NTN)
- 233 Development of 9-Speed Transmission for Light Duty Commercial Vehicle  
 Kouhei Akashi · Takefumi Okamoto · Naohiro Kaneko · Yusuke Akiyama · Shunsuke Onishi · Katsuhiko Enami (Isuzu Motors)

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[9:30-12:10]

## 138 Noise, Vibration, and Ride Quality II Koji Sugiyama (Suzuki Motor)

- 234 Measurement and Evaluation Method for Power Plant Transfer Functions to Enhance Engine Sound Quality  
Kenji Torii (Honda Motor)  
 Keizo Konishi (Honda R&D)
- 235 A Proposal for a Gear-Whine Noise Analysis using the R-S Coupling Principle Considering the Effect of Shafts' Rotation  
Masanori Ogawa · Hiroyuki Shintani · Masatoshi Kanno (Estech)  
 Kazuhito Sakai · Tomohiro Yamazaki (Toyota Motor)
- 236 Creation of Gearshift Operation Feeling by Designing Gearshift Shocks and Gearshift Operation Forces Correspond to Gearshift Sounds  
Yoshihiro Igarashi · Takeshi Toi (Chuo University)

# Oct. 13 (Fri.)

- 237 Investigation of Triple-Walled Structural Factor for Sound Insulation Improvement of Door Parts  
Takashi Iwama · Kentaro Sato · Yoshikiyo Tamai (JFE Steel)
- 238 Vibration Control of a Load Suspended by a Multi-Rotor Drone by Elimination of the Natural Frequency Component  
Kai Kurihara · Toru Yamazaki · Kazurou Iwata (Kanagawa University)
- 239 Construction of Vehicle Sound Model for Predicting Road Traffic Noise  
Ryo Iwamoto · Yoshihiro Shirahashi (Kanagawa University)  
 Masayuki Wada (Nissan Motor)  
 Toru Yamazaki (Kanagawa University)

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## 139 Noise, Vibration, and Ride Quality III Hiroko Tada (Honda Motor)

- 240 Road Evaluation with Load for Fatigue Strength Development  
Tetsu Oami (Toyota Motor)
- 241 On the Active Noise Control Technique of the Noise Emitted from HVAC System  
Koki Shige · Osamu Terashima (Toyama Prefectural University)
- 242 BPF Noise Prediction Technology for Automotive HVAC using AI Method  
Takuya Suzuki (DENSO)
- 243 Development of Pressure Pulsation 1D Model for Brake System by using "2 Pressures/2 Systems" Method  
Masahiro Yano · Nobuhiko Yoshioka (Advics)  
 Yohei Koike · Masashi Komada (Toyota Motor)
- 244 Enclosure Design using Adjoint Method for Vehicles with Low Ram Pressure  
Shuichi Nakagawa · Soichiro Ikegami · Tomohiro Abe (Yanmar Holdings)  
 Kazunari Momose (Advanced Knowledge Laboratory)

232+233

[9:30-11:35]

## 140 Driving Behavior Sou Kitajima (Japan Automobile Research Institute)

- 245** A Study on Accident Risk for Multiple Hazards after Takeover from Autonomous Driving  
Fumitaka Fukuzawa · Yusuke Tanaka · Seiya Tanaka (Suwa University of Science)  
 Masashi Makita (Teikyo University)  
 Hiroshi Kuniyuki (Suwa University of Science)
- 246** Analysis of Motorcycle Driving Maneuvers for Road Alignment in Hilly and Mountainous Areas  
Hiroshi Kuniyuki · So Takechi (Suwa University of Science)

- 247 Experimental Study about Avoidance Behavior of the Driver Who Meets with the Dangerous Scenes during City Driving  
Toru Kojima · Yuki Manabe · Koichi Kitada · Kunihide Sano (NALTEC)  
 Ayumu Shinohara · Nana Takahashi · Tadashi Shima (MLIT)  
 Yukihiro Ikeda (Toyota Motor)

- 248** An Analysis of Motorcycle Overtake Behavior from the Thailand Naturalistic Driving Study  
Marko Medojevic · Hisashi Imanaga (JARI)  
 Hiroyuki Mae · Takashi Hasegawa (JAMA)

- 249 Research on False Activation of Acceleration Control for Pedal Error  
Ryotaro Kai · Shoko Oikawa · Toshiya Hirose (Shibaura Institute of Technology)

[12:35-14:40]

## 141 Driving Assistant Technology Yasuhiro Matsui (NALTEC)

- 250 Consideration of Enhancing Omnidirectional Perception Functionality with Hardware Updates  
Terumoto Komori · Satoru Akahane · Kota Harada · Ko Igarashi · Takeshi Nanami (Woven by Toyota)
- 251 Driver's Abnormal Physical Condition Detection System using Camera-Based Biological Information Estimation  
Ryuhei Takahashi · Yudai Nakamura · Kento Tanaka · Chihiro Kishi · Ryohei Murachi · Jin Kato · Daichi Tsunemichi · Taichi Kojima · Shunya Osawa · Takeru Shiraga (Mitsubishi Electric)
- 252 Path Prediction Algorithm for Motorcycle Rider Assistance System with Camera  
Shoma Hasegawa · Takumi Takeda · Taro Onoue · Akinori Shinagawa (Yamaha Motor)
- 253 A Study of the Effectiveness and Driver Acceptability of Collision Evasive Lateral Manoeuvre Systems  
Takashi Suzuki · Takashi Wakasugi · Kazunori Kikuchi (JARI)  
 Masaaki Senga · Hiroyuki Urabe · Naoshi Hirata (JAMA)
- 254 Development of Easy Use Parking Assistance System using Road Surface Map around Parking Spot  
Muku Takeda · Takeshi Watanabe · Yasuhiro Suzuki · Yusuke Musha · Manato Matsumoto · Junichi Kuwabara · Teruhisa Takano · Ko Sato (Nissan Motor)

[15:20-18:00]

## 142 Safety Education and Risk Prediction Suguru Yoshida (Former Honda Motor)

- 255 Development of Real-Time Remote Management Function for Safe Driving Education at Stop-Controlled Intersections in ASSIST  
Manato Ando · Kazuaki Goshi · Masaki Hayashi · Yasuaki Sumida (Kyushu Sangyo University)  
 Katsuya Matsunaga (Kyushu University)

# Oct. 13 (Fri.)

256 Development of Remote Driving Instruction System based on Autonomous Driving Technology  
Kentaro Handa (Minami Holdings)  
 Tomoya Muraki (TIRE IV)  
 Wataru Miyazaki · Kohei Ishihara · Yoshiro Egami (Minami Holdings)  
 Yuji Matsuki (Fukuoka Institute of Technology)

257 Evaluation of Potential Traffic Accident at Intersections using Big Data and Estimation of Countermeasures -Risk Assessment of Intersections in Koriyama City Cooperating with Koriyama Municipality  
Koji Onishi · Yusuke Ito · Takenori Koase (Toyota Motor)

258 Study on External Recognition by Point Cloud Data using Machine Learning  
Hayato Takahashi · Toshiya Hirose (Shibaura Institute of Technology)  
 Toshio Ito (Shibaura Institute of Technology /Hyper Digital Twins)

259 Study of Collision Risk Focusing on Bicycle Position when Encountering a Vehicle for the Purpose of Rider Education  
Shin'ichi Tachiwana · Eito Moriya · Shigeyoshi Tsutsumi (Kagawa University)

260 Study on Measurement for Friction Characteristics on Actual Road Surface  
 -Identification of Issues Friction Characteristic Measurement in Actual Road Surface  
Atsushi Watanabe · Yukiyo Kuriyagawa (Nihon University)  
 Ichiro Kageyama · Tetsunori Haraguchi (Nihon University /Consortium on Advanced Road-Friction Database)  
 Tetsuya Kaneko (Osaka Sangyo University)  
 Minoru Nishio (Absolute)

234

[9:30-12:10]

## 143 Communication and Electronics I -Control Platform- Yutaka Matsubara (Nagoya University)

261 Extension of Logical Execution Time Paradigm and Prototype Evaluation on AUTOSAR Adaptive Platform  
Tasuku Ishigooka · Hiroyuki Hanyu · Tsuneo Sobue · Kazuyoshi Serizawa (Hitachi Astemo)

262 Development of FOTA System for In-Vehicle ECUs  
 Eisuke Ohashi · Masaaki Uzumi · Mitsuhiro Kikuchi (Nissan Motor)

263 CRC Fault Detection Probability in AUTOSAR E2E Based on Known Hamming Weights  
Yasuhiro Yamasaki · Taichi Emi · Nay Aung Han · Hiroyuki Ohsaki (Kwansei Gakuin University)

264 Proposal and Prototyping of Automotive Computing Platform with Quantum Inspired Processing Unit  
Koji Oya · Hiroshi Fujimoto (MIRISE Technologies)  
 Yohei Hamakawa · Masaya Yamasaki · Kosuke Tatsumura (Toshiba)

265 An Extended STAMP/STPA for Vehicle System Development to Comply with ISO 21448 and ISO 26262  
Ryosuke Oba (Mitsubishi Electric)  
 Keishi Okamoto (National Institute of Technology, Sendai College)  
 Ryo Muramatsu · Hisashi Mori · Manabu Misawa (Mitsubishi Electric)

266 ECU Software Virtualization for Virtual Verification  
Kangyoung Lee · Yeongmo Lee · Eunhyung Cho · Subin Jung · Seongho Han · Beomseop Kim (Hyundai-Autoveer)

[13:10-14:50]

## 144 Communication and Electronics II -Communication Technology- Hiroaki Morino (Shibaura Institute of Technology)

267 Study on In-Vehicle Network Design Technology for Software-Defined Vehicles based on Time and Bandwidth Division Flow Assignment to Accommodate Heterogeneous Communication Flow Types  
Yuji Oishi · Koji Maeda (Hitachi)  
 Goichi Ono (Hitachi Astemo)

268 Prototype Evaluation of ECU Plug & Play and Software Defined Networking for Achieving Software Defined Vehicle (SDV)  
Ikuyoshi Otake · Yasuhiro Yamasaki · Ryo Yamane (Toyota Motor)  
 Yusuke Yamamoto (Sumitomo Electric Industries)  
 Makoto Chujo (Toyota Motor)  
 Tatsuya Izumi · Takahiro Saito (Sumitomo Electric Industries)  
 Kanade Kuriyama · Hideki Goto (Toyota Motor)

269 Automotive Ethernet Development Considering a Communication Delay and Network Extensibility  
Shinji Konoshita · Hajime Iwasaki · Daijirou Yumoto (Nissan Motor)

270 Failure Recovery Performance Evaluation of Redundancy Protocol in Layer 2 Network and its Application to Automotive Ethernet  
Takuto Yoshida · Yasuhiro Kotani · Yoshifumi Kaku (DENSO)

# Oct. 13 (Fri.)

[15:30-18:10]

## 145 Communication and Electronics III -Design and Development- Toshiya Arakawa (Nippon Institute of Technology)

- 271 Liquid Crystal Lens Driving Circuit for Effective Voltage Control Robust to Temporal Change of Power Source  
Yumeto Miyauchi · Sota Shimizu · Ryoya Takewaki (Shibaura Institute of Technology)  
Susumu Sato · Marenori Kawamura (Akita University)  
Matias-Jose Lopes (University of Coimbra)  
Nobuyuki i. Hasebe (Waseda University)
- 272 Optical Axis Position Control of Ultrasonic Liquid Crystal Lens using Acoustic Resonance  
Ryoya Takewaki · Sota Shimizu · Yumeto Miyauchi · Keigo Muryobayashi (Shibaura Institute of Technology)  
Susumu Sato (Akita University)  
Jose Matias Lopes (University of Coimbra)  
Nobuyuki Hasebe (Waseda University)
- 273 Development of Resistant Design Method of Resin Case against Printed Circuit Board Overheating (First Report)  
Miwa Kawasaki · Tai Horikawa (Nissan Motor)  
Hiroki Miyachi · Shintaro Yagi · Koki Koyama (F.C.C.)
- 274 Study of Anti-Sulfurization Performance of Electronic Components by Conformal Coating  
Michiharu Nagata · Yasuhiro Ohshima · Hisao Nishimori (Toyota Motor)
- 275 Study of the Growth Forecast of Zinc Whisker in the Market  
Jun Muto · Yasufumi Shibata · Hisao Nishimori · Yasuyuki Takai · Takashi Tokuda (Toyota Motor)
- 276 Method of Verification on the Desktop about Rust Generation on Energized Part in Car  
Akira Uchida (SUBARU)

## International Conference Room

[9:30-11:10]

## 146 Vehicle Cabin Air Quality Control I Yuzuru Yoshinami (Nissan Motor)

- 277 Risk of Infection and Control of Airborne Pathogens in Automobile Cabins  
Gursaran D. Mathur (Highly-Marelli North America)

- 278 Future Design of Cabin Air Quality  
Koichi Tatsu (Isuzu Motors/AIST)  
Naohide Shinohara (AIST)  
Jyun Sakaguchi (University of Niigata Prefecture)  
Hoon Kim (National Institute of Public Health)  
Masahiro Tokumura (University of Shizuoka)  
Akihiro Nagao (ESPEC)  
Shinsuke Usui (Kaneka Techno Research)  
Noboru Kurihara · Aya Iwai (AIST)  
Sadahito Goto (TOYOBO MC)  
Norimitsu Hayashi (Isuzu Motors)  
Naoki Kagi (Tokyo Institute of Technology)  
Kenichiro Tsuda (Isuzu Advanced Engineering Center)  
Minoru Kuno (GL Sciences)  
Wataru Naito (AIST)
- 279 User Awareness Survey of the Indoor Environment on a Local Bus  
Jun Sakaguchi (University of Niigata Prefecture)  
Naohide Shinohara (AIST)  
Kouichi Tatsu (Isuzu Motors)
- 280 Infection Risk and its Countermeasures in Public Transportations  
Naohide Shinohara (AIST)  
Koichi Tatsu (Isuzu Motors)  
Naoki Kagi (Tokyo Institute of Technology)  
Hoon Kim (National Institute of Public Health)  
Jun Sakaguchi (University of Niigata Prefecture)  
Wataru Naito (AIST)

[12:10-14:15]

## 147 Vehicle Cabin Air Quality Control II Koichiro Iwai (Toyota Central R&D Labs.)

- 281 Management of VOC in the Cabin  
Keigo Kij · Tatsuya Suzuki · Tsukasa Shinohara (J-BUS)  
Kouichi Tatsu (Isuzu Motors)  
Naohide Shinohara · Aya Iwai (AIST)  
Kunihiro Hoshino (ENV Science Trading)  
Shinsuke Usui (Kaneka Techno Research)  
Masahiro Tokumura (University of Shizuoka)  
Noriyuki Abe (IDIoT)
- 282 Study on Quantitative Analysis of VOCs in the Air of Vehicle Cabin using Passive Sampling  
Kunihiro Hoshino (ENV Sciences Trading)  
Koichi Tatsu (Isuzu Motors)  
Masahiro Tokumura (Shizuoka University)  
Takeshi Enomoto (JEOL)
- 283 Comprehensive Risk Assessment of Unregulated-Substances in Vehicle Cabin Air  
Masahiro Tokumura · Sota Sakai · Kana Omori (Shizuoka University)  
Kouichi Tatsu (Shizuoka University/Isuzu Motors)  
Takeshi Enomoto · Ayumi Koike (JEOL)  
Naohide Shinohara (AIST)  
Masakazu Makino (Shizuoka University)
- 284 Effects of Food Consumption on Vehicle Interior Air Quality  
-Measuring Air Quality by Instrumental Analysis  
Kazuhiisa Uchiyama · Mai Yamashiro · Mitsuru Koseki · Hidechika Matsui · Hiroshi Niwa (Tokai Technology Center)
- 285 Study of Alternative Carrier Gas for Gas Chromatography Mass Spectrometry  
-Method for Analyzing the Cabin Air Chamber Quality by TD-GC/MS with Alternative Carrier Gas  
Koichi Tatsu (Isuzu Motors)  
Sadao Nakamura · Takeshi Serino (Agilent Technologies Japan)  
Kunihiro Hoshino (ENV Science Trading)



# MEMO

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# MEMO

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# 人類の進歩を促進するイノベーションに力を

## 車両開発の課題

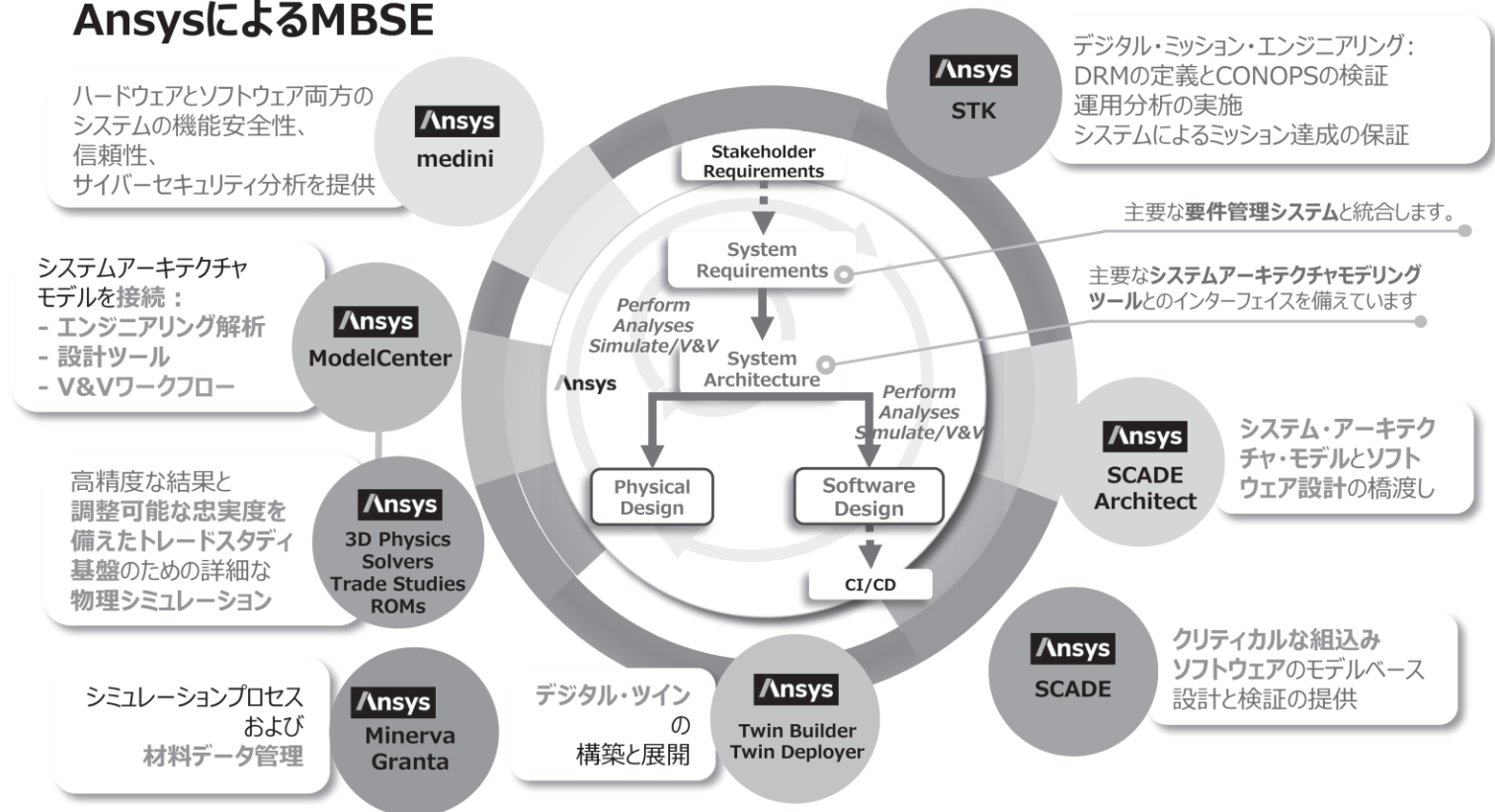
車両開発のチャレンジとして、工数削減と複雑化する開発プロセスの効率化や生産効率を上げ、製品開発のサイクルを短縮し、商品力を早期に見極めなければならない点があります。

一方で商品力を高めるうえで、取り組まなければならない課題は多岐にわたります。

品質の向上 信頼性 機能性 デザイン性 リスクの削減  
環境への配慮 複雑さの管理 イノベーション

この溝を埋める重要な施策としてバーチャル化は必須であり、Ansysの提供できる価値であります。

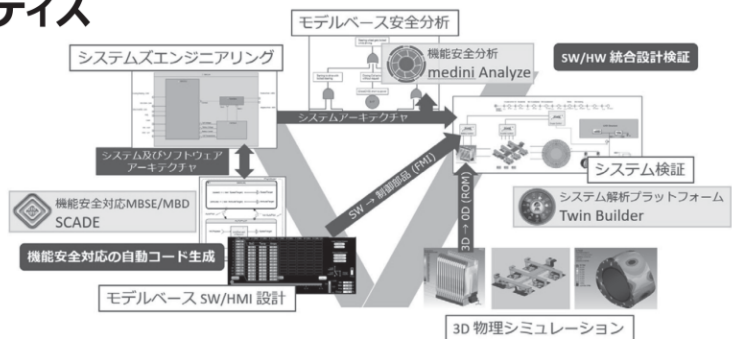
## AnsysによるMBSE



## Ansysによる車両開発のベストプラクティス

- ・デジタルスレッドの接続  
デジタルパイプライン全体でシミュレーションを活用し、人、プロセス、技術、データをつなぐ
- ・製品ライフサイクル全体を考慮  
設計から寿命終了までの材料選択のコストと影響を考慮
- ・シフトレフト  
市場投入までの時間の短縮、サプライチェーンリスクの把握と管理、持続可能性への取り組み

シミュレーションを活用することで、プロトタイプを作成を減らし、仮想的なシミュレーションを通じて製品の挙動や性能、仕上がりを評価できます。強度や耐久性、最適な形状や材料選定による品質向上が可能です。



# Ansys

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<https://www.ansys.com/ja-jp/contact-us>  
アンシス・ジャパン株式会社



 **KYOWA**

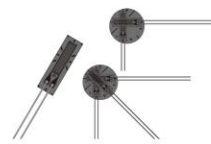
# はかれば、見えてくる。



**見えないところで「ひずみゲージ」が私たちの街と、暮らしを支えています。**

共和電業は1949年の創業以来、「応力計測」というフィールドを中心に世の中に安全と安心を届けてきました。その中核となっているのが「ひずみゲージ」。素材や部品に生じる変形＝ひずみを電気信号として検出する、この小さなセンサは自動車の快適・安全性能の向上、次世代ロボット開発、インフラの維持管理など幅広い分野で活躍しています。

私たちの「はかる」技術からは、素材の強さと弱さ、さらには身の回りの安全と安心、そしてより豊かな明日が見えてきます。平和と希望を未来につないでいく。それが私たちの仕事です。



汎用箔ひずみゲージ  
KFGS



コンパクトレコーダ  
CTRS-100 シリーズ

**株式会社 共和電業**

〒182-8520  
東京都調布市調布ヶ丘3-5-1

[www.kyowa-ei.com](http://www.kyowa-ei.com)