

Technology Tracks COLOR KEY	Body/Chassis/Occupant and Pedestrian Safety/Structure	Advanced Propulsion/Powertrain	Materials and Lightweighting	Environment/Emissions/Sustainability/Thermal Management	Design and Manufacturing	Automotive Electronics/Connectivity/IO T/Smart City
	Other	Connect2Car @ WCX (C2C)				

Tuesday, April 10		Wednesday, April 11		Thursday, April 12	
9:00 a.m. - 12:00 p.m.	2:00 - 5:00 p.m.	9:00 a.m. - 12:00 p.m.	2:00 - 5:00 p.m.	8:30 - 11:30 a.m.	1:00 - 4:00 p.m.
M102 Advances in Lightweight Materials	M104 Applications of Advanced High-Strength Steels and Press Hardening for Automotive Structures	M105 Sheet Metal Forming Technology (Part 1 of 2)	M105 Sheet Metal Forming Technology (Part 2 of 2)	M110 Failure Analysis of Materials, Components, and Systems / Advances in Metalcasting	M204 Optical Measurement and Nondestructive Testing Techniques in Automotive Engineering
M202 Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (Part 1 of 3)	M202 Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (Part 2 of 3)	M202 Advanced Analysis, Design, and Optimization of Materials, Restraints, and Structures for Enhanced Automotive Safety and Weight Reduction (Part 3 of 3)	M213 Multi-Discipline Interaction and Special CAE Applications	M200 Fatigue Modeling / Testing & CAE Durability Analysis (Part 1 of 2)	M200 Fatigue Modeling / Testing & CAE Durability Analysis (Part 2 of 2)
M203 Automotive Engineering Testing and Test Methods (Part 1 of 2)	M203 Automotive Engineering Testing and Test Methods (Part 2 of 2)	M217 Materials-Environment Interactions	M208 Load Simulation and Vehicle Performance Tire and Terrain	M206 Load Simulation and Vehicle Performance Nonlinear Components/Systems	M207 Load Simulation and Vehicle Performance Ride Comfort
M209 Load Simulation and Vehicle Performance Multi-body Dynamics and Intelligent Vehicle Dynamics	M210 Load Simulation and Vehicle Performance Handling and Dynamics (Part 1 of 3)	M210 Load Simulation and Vehicle Performance Handling and Dynamics (Part 2 of 3)	M210 Load Simulation and Vehicle Performance Handling and Dynamics (Part 3 of 3)		
M211 NVH CAE Analysis & Testing Correlations (Part 1 of 2)	M211 NVH CAE Analysis & Testing Correlations (Part 2 of 2) M211 Technical Expert Panel Discussion: NVH CAE and Testing Methodology in Vehicle Design	M214 Automotive Tribology (Part 1 of 2)	M214 Automotive Tribology (Part 2 of 2)		
M300 Automotive Polymeric, Plastic Components and Composites (Part 1 of 2)	M300 Automotive Polymeric, Plastic Components and Composites (Part 2 of 2)	M301 Advances in Instrument Panels, Seats, and Interiors M301 Technical Expert Panel Discussion: Shared Autonomous Vehicles (SAV) and their Impact on the Design and Engineering of Automotive Interiors	M999 Automotive Composites	M216 Welding and Joining and Fastening (Part 1 of 2)	M216 Welding and Joining and Fastening (Part 2 of 2)
SS101 CAD/CAM/CAE Technology (Part 1 of 4)	SS101 CAD/CAM/CAE Technology (Part 2 of 4)	SS101 CAD/CAM/CAE Technology (Part 3 of 4)	SS101 CAD/CAM/CAE Technology (Part 4 of 4)	M400 Next Generation Automotive Coating Materials (Part 1 of 2): Advances in Coatings	M400 Next Generation of Automotive Coating Materials (Part 2 of 2): UV/EB Leading the Way for the Future of Automotive
HX101 Thermal System Components (Part 1 of 2)	HX104 Climate Control (Part 1 of 3)	HX104 Climate Control (Part 2 of 3)	HX104 Climate Control (Part 3 of 3)	HX103 Energy Efficiency of Thermal Systems	HX103 Energy Efficiency of Thermal Systems
HX102 Thermal Systems Modeling and Simulation (Part 1 of 2)		HX102 Thermal Systems Modeling and Simulation (Part 2 of 2)	HX105 Thermal Systems for Hybrid and Electric Vehicles	HX106 Powertrain Thermal Management (Part 1 of 2)	HX106 Powertrain Thermal Management (Part 2 of 2)
PFL450 Particle Emissions from Combustion Sources (Part 1 of 3)	PFL450 Particle Emissions from Combustion Sources (Part 2 of 3)	PFL450 Particle Emissions from Combustion Sources (Part 3 of 3)		PFL460 Gaseous Engine Emissions (Part 1 of 2)	PFL460 Gaseous Engine Emissions (Part 2 of 2)
PFL421 System Integration And Durability	PFL410 Exhaust Emissions Control - New Developments (Part 2 of 2)	PFL440 Emissions Measurement and Testing (Part 1 of 3)	PFL440 Emissions Measurement and Testing (Part 2 of 3)	PFL440 Emissions Measurement and Testing (Part 3 of 3)	PFL426 Meeting the ARB Low Emission Standard
PFL424 Advances in Nox Reduction Technology (Part 1 of 2)	PFL424 Advances in Nox Reduction Technology (Part 2 of 2)	PFL422 Advanced Catalysts and Substrates (Part 1 of 2)	PFL422 Advanced Catalysts and Substrates (Part 2 of 2)	PFL425 On-board Measurement and Control	
SS800 Vehicle Aerodynamics (Part 1 of 6) Aerodynamics Development	SS800 Vehicle Aerodynamics (Part 2 of 6) Motorsports and CFD Methods Development	SS800 Vehicle Aerodynamics (Part 3 of 6) Unsteady Aerodynamics & Aeroacoustics	SS800 Vehicle Aerodynamics (Part 4 of 6) Commercial Vehicles and Experimental Technologies & Correlation	SS800 Vehicle Aerodynamics (Part 5 of 6) Fundamental Aerodynamics	SS800 Vehicle Aerodynamics (Part 6 of 6) Rotating Flows and Surface Contamination
AE202 Cybersecurity for Cyber-Physical Vehicle Systems (Part 1 of 2)	AE202 Cybersecurity for Cyber-Physical Vehicle Systems (Part 2 of 2)	AE303 Wiring and Harnesses	AE403 System Safety and Verification of Automated Driving Systems & ADAS (Part 1 of 3)	AE403 System Safety and Verification of Automated Driving Systems & ADAS (Part 2 of 3)	AE403 System Safety and Verification of Automated Driving Systems & ADAS (Part 3 of 3)
AE206 Infotainment Systems	AE401 Driver Assistance Systems: Algorithms, Applications and Electronic Sensing (Part 1 of 5)	AE401 Driver Assistance Systems: Algorithms, Applications and Electronic Sensing (Part 2 of 5)	AE401 Driver Assistance Systems: Algorithms, Applications and Electronic Sensing (Part 3 of 5)	AE401 Driver Assistance Systems: Algorithms, Applications and Electronic Sensing (Part 4 of 5)	AE401 Driver Assistance Systems: Algorithms, Applications and Electronic Sensing (Part 5 of 5)
AE506 Autonomous Systems (Part 1 of 3)	AE506 Autonomous Systems (Part 2 of 3) AE506 Technical Expert Panel Discussion: Autonomous Systems	AE506 Autonomous Systems (Part 3 of 3)	AE502 Vehicle to Vehicle AE299 Technical Expert Panel Discussion: Cyber Security for Diagnostics Development	AE108 SW SW and System Design, Testing and Integration / Hardware Design Engineering and Development	AE301 Engine & Transmission Control
AE507 The Internet of Connected Vehicles	GAMIC 12-5pm	AE302 Sensors and Actuators (Part 1 of 2)	AE302 Sensors and Actuators (Part 2 of 2)	AE402 Electromagnetics and Antennas	AE203 Systems Diagnostics and Prognostics AE299 Technical Expert Panel Discussion: Big Data for Diagnostics Development
AE103 Model-Based Controls and Software	AE509 Blockchain and IoT	AE201 Vehicle Networks and Communication (Part 1 of 2)	AE201 Vehicle Networks and Communication (Part 2 of 2)	AE504 Intelligent Transportation Systems (Part 1 of 2)	AE504 Intelligent Transportation Systems (Part 2 of 2)
AE503 Vehicle to Infrastructure (Part 1 of 2)	AE503 Vehicle to Infrastructure (Part 2 of 2)	AE101 Systems Engineering	AE501 Intelligent Vehicle Initiative (Part 1 of 3)	AE501 Intelligent Vehicle Initiative (Part 2 of 3)	AE501 Intelligent Vehicle Initiative (Part 3 of 3)

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C2C @ WCX 10:40am-12:00pm Roundtable: OEM/Government Interaction	C2C @ WCX 2-3:20pm Big Data for Diagnostics/Prognostic Development Panel - Ravi Rajamani 3:30-5:00 PM Roundtable: Validation Is the Path To Getting On the Road - What is it Going to Take to Get Us There?	C2C @ WCX 10:40am-12:00pm AE299 CyberSecurity 2.0 – Collaboration, Incident Response and Automation	C2C @ WCX 2:00pm-3:30pm Roundtable: Communications Infrastructure Exchange – The Latest in Technology Updates 3:30-5:00pm Systems Engineering Panel - Jim Sherman	C2C @ WCX 8:30am-9:00am Trevor Jones Award Winner Keynote 9:00 am-10:30am Roundtable: SEMI - 10:30am-12:00pm Roundtable: Internet of Things (IoT)	C2C @ WCX 1:00pm-1:20pm Connected Vehicle Challenge Sponsor: What the Connected Vehicle Challenge is all about 1:20pm-4:00pm WCX Connected Vehicle
PFL410 Exhaust Emissions Control - New Developments (Part 1 of 2) PFL430 Emissions Measurement and Testing (Part 1 of 4)	PFL430 Emissions Measurement and Testing (Part 2 of 4)	PFL430 Emissions Measurement and Testing (Part 3 of 4)	PFL430 Emissions Measurement and Testing (Part 4 of 4)	PFL423 Advances in Particulate Filter Substrates (Part 1 of 2)	PFL423 Advances in Particulate Filter Substrates (Part 2 of 2)
IDM101: Predictive Analytics and Tools Development	IDM102: Reliability and Robust Design in Automotive Engineering: Reliability-Based Design Optimization and Robustness	IDM103: Reliability and Robust Design in Automotive Engineering: Reliability and Accelerated Testing	IDM104: Reliability and Robust Design in Automotive Engineering: Decision Under Uncertainty/Uncertainty Modeling	IDM105: Reliability and Robust Design in Automotive Engineering: Reliability and Robust Design in Automotive Aero-Thermal and Fluid Systems	IDM106: Reliability and Robust Design in Automotive Engineering: Model Validation and Verification
IDM109: Integrated Computational Materials Engineering (ICME)	IDM201: Modeling and Simulation of Military Ground Vehicles (Part 1 of 3)	IDM201: Modeling and Simulation of Military Ground Vehicles (Part 2 of 3)	IDM201: Modeling and Simulation of Military Ground Vehicles (Part 3 of 3)	IDM110: Business Modeling/Operation Research/Big Data Analytics	IDM302: Additive (3D Printing) Manufacturing
IDM500 Trends in Development of Accelerated Reliability and Durability Testing Technology / Multidisciplinary Design Optimization (MDO)	SDP100 Sustainable Development for Automotive Industry (Part 1 of 3): LCA and Automotive Sustainability: Materials Production; Manufacturing; Use; End-of-Life and Auto Industry Corporate Sustainability Programs	SDP100 Sustainable Development for Automotive Industry (Part 2 of 3): Advances in Alternative Energy Sources for Sustainable Development in the Transportation Sector	SDP100 Sustainable Development for Automotive Industry (Part 3 of 3): Vehicle Electrification Strategies for Sustainability	IDM304: Intelligent Manufacturing Solutions	IDM303: Robotics and System Integration
PFL510 New CI & SI Engines and Components (Part 1 of 2)	PFL510 New CI & SI Engines and Components (Part 2 of 2)	PFL520 Engine Boosting Systems (Part 1 of 2)	PFL520 Engine Boosting Systems (Part 2 of 2)		PFL290 Cold Start and Transients
SS100 Body Engineering and Design	SS103 Design Optimization - Methods and Applications (Part 1 of 3)	SS103 Design Optimization - Methods and Applications (Part 2 of 3)	SS103 Design Optimization - Methods and Applications (Part 3 of 3)	SS700 Tire and Wheel Technology (Part 1 of 2)	SS700 Tire and Wheel Technology (Part 2 of 2)
SS600 Steering and Suspension Technology Symposium (Part 1 of 2): Steering	SS600 Steering and Suspension Technology Symposium (Part 2 of 2): Suspensions	SS000 Noise, Vibration, and Harshness (NVH) Interior and Exterior (Part 1 of 2)	SS000 Noise, Vibration, and Harshness (NVH) Interior and Exterior (Part 2 of 2)		
PFL710 Advanced Hybrid and Electric Vehicle Powertrains (Part 1 of 4)	PFL710 Advanced Hybrid and Electric Vehicle Powertrains (Part 2 of 4)	PFL710 Advanced Hybrid and Electric Vehicle Powertrains (Part 3 of 4)	PFL710 Advanced Hybrid and Electric Vehicle Powertrains (Part 4 of 4)		
PFL740 Electric Motor & Power Electronics (Part 1 of 3)	PFL740 Electric Motor & Power Electronics (Part 2 of 3)	PFL740 Electric Motor & Power Electronics (Part 3 of 3)		PFL720 Advanced Fuel Cell Vehicle Applications (Part 1 of 2)	PFL720 Advanced Fuel Cell Vehicle Applications (Part 2 of 2)
SS500 Occupant Protection: Accident Reconstruction (Part 1 of 4)	SS500 Occupant Protection: Accident Reconstruction (Part 2 of 4)	SS500 Occupant Protection: Accident Reconstruction (Part 3 of 4)	SS500 Occupant Protection: Accident Reconstruction (Part 4 of 4) and Occupant Protection: Event Data Recorders (EDR)		
SS501 Occupant Protection: Biomechanics (Part 1 of 2)	SS501 Occupant Protection: Biomechanics (Part 2 of 2)	SS510 Occupant Protection: Structural Crashworthiness and Occupant Safety	SS503 Occupant Protection: Integrated Safety Systems	SS508 Occupant Protection: Safety Test and Simulation Methods and Applications	
SS400 Active Safety: Systems and Sub Systems (Part 1 of 2)	SS400 Active Safety: Systems and Sub Systems (Part 2 of 2)	SS505 Occupant Protection: Pedestrian and Cyclist Safety (Part 1 of 2)	SS505 Occupant Protection: Pedestrian and Cyclist Safety (Part 2 of 2) and Occupant Restraints (Air Bags, Seat Belts, Knee Bolsters, Child Seats, etc.)	SS506 Occupant Protection: Rear Impact, Side Impact and Rollover	SS200 Fire Safety
SS900 Vehicle Dynamics, Stability and Control (Part 1 of 4)	SS900 Vehicle Dynamics, Stability and Control (Part 2 of 4)	SS900 Vehicle Dynamics, Stability and Control (Part 3 of 4)	SS900 Vehicle Dynamics, Stability and Control (Part 4 of 4)	SS901 Electric Vehicle Drivetrain Dynamics	SS599 Technical Expert Panel Discussion: What do Autonomous Vehicles mean for Regulation
SS302 Human Factors in Driving and Automotive Telematics (Part 1 of 2)	SS302 Human Factors in Driving and Automotive Telematics (Part 2 of 2)	SS300 Automotive Lighting Technology and Human Factors in Driver Vision and Lighting (Part 1 of 2)	SS300 Automotive Lighting Technology and Human Factors in Driver Vision and Lighting (Part 2 of 2)	SS303 Seating Comfort (Part 1 of 2)	SS303 Seating Comfort (Part 2 of 2)
PFL730 Advanced Battery Technologies (Part 1 of 4)	PFL730 Advanced Battery Technologies (Part 2 of 4)	PFL730 Advanced Battery Technologies (Part 3 of 4)	PFL730 Advanced Battery Technologies (Part 4 of 4)	PFL750 Controls for Hybrids and Electric Powertrains (Part 1 of 2)	PFL750 Controls for Hybrids and Electric Powertrains (Part 2 of 2)
PFL213 Abnormal SI Combustion (Knock) (Part 1 of 2)	PFL213 Abnormal SI Combustion (Knock & Preignition) (Part 2 of 2)	PFL530 CI & SI Power Cylinder Systems	PFL215 SI Combustion Ignition & Fuel / Additive Effects	PFL211 Basic SI Combustion Processes	PFL216 Dilute SI Combustion
PFL120 Multi-Dimensional Engine Modeling (Part 1 of 6)	PFL120 Multi-Dimensional Engine Modeling (Part 2 of 6)	PFL120 Multi-Dimensional Engine Modeling (Part 3 of 6)	PFL120 Multi-Dimensional Engine Modeling (Part 4 of 6)	PFL120 Multi-Dimensional Engine Modeling (Part 5 of 6)	PFL120 Multi-Dimensional Engine Modeling (Part 6 of 6)
PFL110 0-D and 1-D Modeling and Numerics (Part 1 of 6)	PFL110 0-D and 1-D Modeling and Numerics (Part 2 of 6)	PFL110 0-D and 1-D Modeling and Numerics (Part 3 of 6)	PFL110 0-D and 1-D Modeling and Numerics (Part 4 of 6)	PFL110 0-D and 1-D Modeling and Numerics (Part 5 of 6)	PFL110 0-D and 1-D Modeling and Numerics (Part 6 of 6)

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PFL220 Combustion in Compression-Ignition Engines (Part 1 of 5)	PFL220 Combustion in Compression-Ignition Engines (Part 2 of 5)	PFL220 Combustion in Compression-Ignition Engines (Part 3 of 5)	PFL220 Combustion in Compression-Ignition Engines (Part 4 of 5)	PFL220 Combustion in Compression-Ignition Engines (Part 5 of 5)	
PFL610 Transmission Systems/Drive Unit (Part 1 of 2)	PFL610 Transmission Systems/Drive Unit (Part 2 of 2)	PFL250 Partially Premixed Compression Ignition, PPCI (Part 1 of 2)	PFL250 Partially Premixed Compression Ignition, PPCI (Part 2 of 2)	PFL230 Homogeneous Charge Compression Ignition, HCCI (Part 1 of 2)	PFL230 Homogeneous Charge Compression Ignition, HCCI (Part 2 of 2)
PFL680 Driveline Modeling (Part 1 of 2)	PFL680 Driveline Modeling (Part 2 of 2)	PFL640 Driveline Controls	PFL630 All Wheel Drive, IVT / CVT	PFL670 Driveline Components/Subsystems (Part 1 of 2)	PFL670 Driveline Components/Subsystems (Part 2 of 2)
PFL140 Fluid flow Measurement & Analysis	PFL150 Diagnostic Development	PFL660 Driveline NVH	PFL270 Combustion in Gaseous-Fueled Engines (Part 1 of 2)	PFL270 Combustion in Gaseous-Fueled Engines (Part 2 of 2)	CONG201 Mobility History
PFL260 Dual Fuel Combustion (Part 1 of 4)	PFL260 Dual Fuel Combustion (Part 2 of 4)	PFL260 Dual Fuel Combustion (Part 3 of 4)	PFL260 Dual Fuel Combustion (Part 4 of 4)	PFL280 Combustion Control and Optimization (Part 1 of 2)	PFL280 Combustion Control and Optimization (Part 2 of 2)
PFL130 Control System Design & Calibration (Part 1 of 3)	PFL130 Control System Design & Calibration (Part 2 of 3)	PFL130 Control System Design & Calibration (Part 3 of 3)			
PFL310 Fuel and Additive Effects on Engine Systems	PFL350 Heavy Duty Diesel & Driveline Lubricants	PFL180 Technological Developments in China (Part 1 of 2)	PFL180 Technological Developments in China (Part 2 of 2)		
PFL340 Automotive Gasoline Engine Lubricants	PFL201: Technical Expert Panel Discussion: Medium-Duty and Heavy-Duty Vehicle Efficiency Opportunities through the Co-Optimization of Fuel and Engine Technologies PFL202 Technical Expert Panel Discussion: Advanced Characterization Methods for Combustion Systems	PFL330 Alternative and Advanced Fuels (Part 1 of 3)	PFL330 Alternative and Advanced Fuels (Part 2 of 3)	PFL330 Alternative and Advanced Fuels (Part 3 of 3)	
PFL570 Valvetrain, including VVA (Part 1 of 2)	PFL570 Valvetrain, including VVA (Part 2 of 2)	PFL580 Engine Block, Cylinder Heads, Oil & Water Pumps, Intake & Exhaust Systems (Part 1 of 2)	PFL580 Engine Block, Cylinder Heads, Oil & Water Pumps, Intake & Exhaust Systems (Part 2 of 2)	PFL550 Powertrain NVH (Part 1 of 2)	PFL550 Powertrain NVH (Part 2 of 2)
PFL370 Holistic Session on Fuel Consumption and Fuel Economy (Part 1 of 2)	PFL370 Holistic Session on Fuel Consumption and Fuel Economy (Part 2 of 2)	PFL170 High Efficiency IC Engines Concepts (Part 1 of 4)	PFL170 High Efficiency IC Engines Concepts (Part 2 of 4)	PFL170 High Efficiency IC Engines Concepts (Part 3 of 4)	PFL170 High Efficiency IC Engines Concepts (Part 4 of 4)
PFL320 Fuel Injection and Sprays (Part 1 of 6)	PFL320 Fuel Injection and Sprays (Part 2 of 6)	PFL320 Fuel Injection and Sprays (Part 3 of 6)	PFL320 Fuel Injection and Sprays (Part 4 of 6)	PFL320 Fuel Injection and Sprays (Part 5 of 6)	PFL320 Fuel Injection and Sprays (Part 6 of 6)