



# AERO9

56<sup>th</sup> CASI Aeronautics Conference and Annual General Meeting

An accomplished past, a boundless future ...  
Celebrating 100 Years of Powered Flight in Canada

Aerospace Structures & Materials	Aircraft Design & Development	Aerodynamics	Propulsion	Unmanned Aerial Vehicles
Plenary Event		Social Event		Coffee and Networking/Lunch

<b>Tues May 5</b>	<b>07:30 – 08:15</b>	<b>Coffee &amp; Networking</b>
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<b>ROOM</b>	
<b>Founders</b>	Registration and Administration open 07:30 – 12:00 and 12:45 – 18:00
<b>Strategy</b>	Speaker Ready Room open all day
<b>Fair Play</b>	VIP Room open all day

<b>ROOM</b>	<b>08:15 – 08:30</b>	<b>08:30 – 10:00</b>	
<b>Signed Sealed &amp; Delivered</b>	<b>Welcome From the Host Organizations</b>  Nashed Youssef President, CASI  Fred Habashi President, CFDCS	<b>Opening Plenary</b>  Antony Jameson Cord-Christian Rossow  Fassi Kafyeke	<b>Designing the Aircraft of the Future</b>  Stanford University Deutsches Zentrum für Luft- und Raumfahrt Bombardier Aerospace

	<b>10:00 – 10:20</b>	<b>Coffee &amp; Networking</b>
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<b>Tues May 5</b>	<b>Technical Sessions</b>		
<b>ROOM</b>	<b>10:20 – 10:50</b>	<b>10:50 – 11:20</b>	<b>11:20 – 11:50</b>
<b>Signed</b>	CFDCS session	CFDCS session	CFDCS session
<b>Sealed</b>	<b>101</b> Aerospace Materials and Processes: Future Applications  <i>Marie-Josée Landry</i>  Bombardier Aerospace	<b>102</b> Investigation of Aluminium Lithium 8090 Embrittlement  <i>T. Wood et al</i>  Institute for Aerospace Research, NRC	<b>103</b> Creep testing of new high temperature aluminum alloys for transportation applications  <i>T. Wood et al</i>  Institute for Aerospace Research, NRC
<b>Delivered</b>	<b>201/202</b> Balancing Environmental Quality and Economic Prosperity - The ICAO Perspective  <i>Jane Hupe</i>  Committee on Aviation Environmental Protection ICAO, Canada		<b>203</b> The Technical Legacy of Dr. John McMasters  <i>Askin T. Isikveren</i>  Department of Aerospace Engineering University of Bristol, UK
<b>Leaders</b>	<b>116</b> Damage Tolerance Analysis of the North American SNJ-6 Wing Lower Attachment Angle  <i>Y. Bombardier</i>  Institute for Aerospace Research, NRC	<b>117</b> Experimental Investigation of a Selection of Fatigue Life Extension Processes on Countersunk Fastener Holes  <i>Z. Hajjar et al</i>  L-3 Communications Military Aviation Services Canada	<b>125</b> Quantitative Risk Assessment for CP-140 Wing Structures  <i>Min Liao</i>  Institute for Aerospace Research, NRC
<b>Airworthiness &amp; Life Extension 1</b>			



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<b>Shakers</b> <b>Transition/ Boundary Layer Flows</b>	<b>314</b> New method for transition estimation for external flows <i>Paul-Dan Silisteanu et al</i> Ecole de technologie supérieure	<b>315</b> Simulation of roughness and pitch-rate effects on airfoil static and dynamic stall <i>M. Mamou et al</i> Institute for Aerospace Research, NRC	<b>316</b> The spectral element approach for receptivity studies of flow past a plate with elliptic leading edge <i>Catherine Mavriplis et al</i> University of Ottawa
<b>Mulligan</b> <b>Acoustics</b>	<b>301</b> Prediction of noise generated by flow through an orifice in a duct using STAR-CD code <i>George Waller</i> Bombardier Aerospace	<b>302</b> Benchmarking of a RANS CFD process for a turbofan jet noise <i>M. Cunningham et al</i> Pratt & Whitney Canada	<b>303</b> Classical wake/stator interactions addressed with an analytical cascade model <i>Helène Posson</i> Université de Sherbrooke
<b>Traders</b> <b>New Technology</b>	<b>401</b> Preliminary Design of a Lab-Scale Hybrid Rocket Engine <i>Adam Trumpour et al</i> Department of Aerospace Engineering Ryerson University	<b>402</b> Investigation of compressor pre-stall instabilities <i>Leslie Bennett</i> Royal Military College of Canada	<b>CASI Propulsion Section Annual Meeting</b>
<b>Deciders</b>	CFDSC session	CFDSC session	CFDSC session
<b>Set-up</b>	CFDSC session	CFDSC session	CFDSC session
<b>Mainstream</b>	CFDSC session	CFDSC session	CFDSC session

	<b>11:50 – 13:00</b>	<b>Lunch – On your own</b>	
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<b>ROOM</b>	<b>13:00 – 14:00</b>		
<b>Signed Sealed &amp; Delivered</b>	<b>Highlight Lecture</b>	<b>Antony Jameson</b> <b>Thomas V. Jones Professor of Engineering</b> <b>Stanford University</b>	<b>Computational Fluid Dynamics and Airplane Design: Its Current and Future Impact</b>

<b>Tues May 5</b>	<b>Technical Sessions</b>		
<b>ROOM</b>	<b>14:15 – 14:45</b>	<b>14:45 – 15:15</b>	<b>15:15 – 15:45</b>
<b>Signed</b>	CFDSC session	CFDSC session	CFDSC session
<b>Sealed</b> <b>Advanced Joining Concepts 1</b>	<b>140</b> An Overview of the FSW Demonstrator Project at Bombardier <i>Leo Kok</i> Bombardier Aerospace	<b>139</b> Application of Needle Peening to Limit the Distortions in Friction Stir Welded (FSW) Panels <i>S. Larose et al</i> Institute for Aerospace Research, NRC	<b>138</b> Joining Methods for Thermoplastic Composites Structures <i>Ali Yousefpour et al</i> Aerospace Manufacturing Technology Centre, Institute for Aerospace Research, NRC
<b>Delivered</b> <b>Novel Aircraft Systems &amp; Testing</b>	<b>204</b> Advanced Vision Systems and Equivalent Visual Operations <i>Anthony J. Barber</i> Bombardier Aerospace	<b>205</b> Aircraft Fuselage Skin Material Shielding Effectiveness <i>Mona Cherkaoui et al</i> Bombardier Aerospace	<b>206</b> Approach to Aircraft Systems Protection in HIRF Lightning Environment Associated with the Use of Composite Structure <i>Fidèle Moupfouma et al</i> Bombardier Aerospace



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<b>Leaders</b> <b>Composites 1</b>	107 On the Calculation and Simulation of Thermally Induced Residual Stresses in Glare Fibre Metal Laminates <i>P.P. Krimbalis et al</i> Institute for Aerospace Research, NRC	108 Determination of bonded single-strap composite joint size for laboratory test analysis <i>Gang Li et al</i> Structures and Materials Performance Laboratory, Institute for Aerospace Research, NRC	109 Experimental study of crack growth behavior of bonded composite single-strap joints in cyclic loading condition <i>Gang Li et al</i> Structures and Materials Performance Laboratory, Institute for Aerospace Research, NRC
<b>Shakers</b> <b>UAV 1</b>	501 3-D Motion Planning for Safe Operation of Small Autonomous Aerial Vehicles <i>Steven L Waslander et al</i> Department of Mechanical & Mechatronics Engineering University of Waterloo	502 Design and Fabrication of Radio-Controlled Model of Hansa Aircraft <i>Vijay Kumar Badagi et al</i> Concordia University	503 Simulation of Autonomous Flight in an Urban Wind Environment with Applications to a Radio-Controlled Helicopter <i>David Galway et al</i> Department of Mechanical & Aerospace Engineering Carleton University
<b>Mulligan</b> <b>Heat Transfer</b>	326 Recapturing energy from a vortex behind the Ahmed car using a paddle wheel <i>Louis Gagnon et al</i> Université Laval	304 Heat transfer from a compressible jet impinging on a concave surface <i>François Morency et al</i> Ecole de technologie supérieure	306 Numerical Investigation of mechanism to aid in enhancing surface heat transfer from an impinging 2-D hot air jet <i>Farooq Saeed et al</i> King Fahd University of Petroleum and Minerals Saudi Arabia
<b>Traders</b> <b>Integration of Propulsion Systems</b>	404 Trends in Propulsion Integration <i>K. Bunker et al</i> Pratt & Whitney Canada	405 Multi-dimensional optimization of a ducted fan for a single engine aircraft <i>Adam Jasudavicius et al</i> Department of Aerospace Engineering, Ryerson University	
<b>Deciders</b>	CFDSC session	CFDSC session	CFDSC session
<b>Set-up</b>	CFDSC session	CFDSC session	CFDSC session
<b>Mainstream</b>	CFDSC session	CFDSC session	CFDSC session

	<b>15:45 – 16:15</b>	<b>Coffee and Networking</b>	
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Tues May 5	Technical Sessions			
ROOM	16:15 – 16:45	16:45 – 17:15	17:15 – 17:45	
<b>Signed</b>	CFDSC session	CFDSC session	CFDSC session	
<b>Sealed</b> <b>Advanced Joining Concepts 2</b>	<p><b>137</b> Friction stir processing technology for the repair of nickel-aluminum bronze <i>J. Deronja et al</i> Institute for Aerospace Research, NRC</p>	<p><b>114</b> Non-Destructive Evaluation of Friction Stir Welds for Aerospace Applications <i>Mandache et al</i> Institute for Aerospace Research, NRC</p>		
<b>Delivered</b> <b>Methods &amp; Modelling 1</b>	<p><b>207</b> New Methods and Code for Stability Derivatives Calculations from Aircraft Geometrical Data Knowledge <i>Nicoleta Anton et al</i> École de technologie supérieure</p>	<p><b>208</b> Integrated Hardware and Software Optimization of Conceptual Flight Control System Development <i>Chris S. Beaverstock et al</i> University of Bristol, UK</p>	<p><b>209</b> Gust Load Alleviation Using Model Predictive Control for Large Aspect Ratio UAVs <i>Sohrab Haghghat et al</i> Institute for Aerospace Studies University of Toronto</p>	
<b>Leaders</b> <b>NDE &amp; Structural Health Monitoring 1</b>	<p><b>104</b> Structural Health Monitoring: Opportunities and Challenges on Regional Aircraft <i>Jerome Pinsenault</i> Bombardier Aerospace</p>	<p><b>105</b> The Case for Structural Health Monitoring in the CF <i>McRae et al</i> Air Vehicles Research Section, Defence R&amp;D Canada</p>	<p><b>106</b> MEMS-based Dynamic Pressure Sensor for Gas Turbine Engine Health Management <i>Gino Rinaldi et al</i> Air Vehicles Research Section, Defence R&amp;D Canada</p>	
<b>Shakers</b> <b>UAV 2</b>	<p><b>504</b> A Combined Receding Horizon and Virtual Potential Field Algorithm for UAV Search <i>Andrew K Sun et al</i> Institute for Aerospace Studies University of Toronto</p>	<p><b>505</b> Decentralized Fault Tolerant Flight Control System Design by Receding Horizon Strategy <i>W.F. Xie et al</i> Department of Mechanical &amp; Industrial Engineering Concordia University</p>	<p><b>506</b> Non-Linear Control of a Fixed-Wing UAV over a Full Flight Path <i>Mario Landry et al</i> Department of Electrical Engineering École de technologie supérieure</p>	
<b>Mulligan</b> <b>Icing</b>	<p><b>307</b> Application of the Lattice-Boltzmann method to the calculation of aerodynamic parameters on clean and ice-accreted airfoils <i>Jerôme Guet et al</i> École polytechnique de Montréal</p>	<p><b>308</b> Numerical Simulation Over a Clean and Iced Wind Turbine Blade <i>Fernando Villalpando et al</i> École polytechnique de Montréal</p>	<p><b>309</b> POD/Kriging Approximations of Multi-Disciplinary CFD Simulation with Application to In-Flight Icing <i>Vlad Lappo et al</i> McGill University</p>	<p><b>310</b> 3-D Numerical Icing Simulation on a Rotating Wind Turbine <i>Noureddine Tarchoune et al</i> École de technologie supérieure</p>
<b>Traders</b> <b>Operational Development Experience</b>	<p><b>410</b> Engine Life Cycle Management – A Fleet Perspective <i>Leslie Harkness</i> Westjet</p>	<p><b>411</b> Parametric-Specific Fuel Consumption Analysis of the PW120A Turboprop Engine <i>Omer Majeed</i> Specific Range Solutions Ltd.</p>		<p><b>412</b> Combustor geometry and injector condition influence on engine life <i>Kotzer et al</i> Royal Military College of Canada</p>
<b>Deciders</b>	CFDSC session	CFDSC session	CFDSC session	
<b>Set-up</b>	CFDSC session	CFDSC session	CFDSC session	
<b>Mainstream</b>	CFDSC session	CFDSC session	CFDSC session	



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	18:00 - 19:30	Welcome Reception - Brookstreet Hotel
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## CASI activities during AERO'09

### Monday May 4

Time	Room	Activity
10:00 - 11:00	Strategy	Meeting of Symposium Chairs
13:30 - 16:30	Fair Play	CASI Council 4 <sup>th</sup> Meeting of the 2008-09 Council
16:30 - 17:00	Fair Play	CASI Council 1 <sup>st</sup> Meeting of the 2009-10 Council

### Tuesday May 5

Time	Room	Activity
11:20 - 11:50	Traders	Propulsion Section Annual Meeting
17:45	Strategy	Branch Chairs and Executives Meeting

### Wednesday May 6

Time	Room	Activity
11:15 - 11:45	Mainstream	Aerodynamics Section Annual Meeting
12:00 - 12:45	Mulligan	CASI 2009 Annual General Meeting & light lunch
15:00 - 15:30	Deciders	Aerospace Structures & Materials Annual Meeting

### Thursday April 26

Time	Room	Activity
11:15 - 11:45	Shakers	Aircraft Design & Development Annual Meeting



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<b>Wed May 6</b>	<b>07:30 – 08:15</b>	<b>Coffee and networking</b>
<b>ROOM</b>		
<b>Founders</b>	Registration and Administration – 07:30 – 12:00 and 12:45 – 17:45	
<b>Strategy</b>	Speaker Ready Room – all day	
<b>Fair Play</b>	VIP Room – all day	

<b>ROOM</b>	<b>08:15 – 10:00</b>		
<b>Signed Sealed &amp; Delivered</b>	<b>Unveiling of Two Major Aerospace Industry Initiatives for the Environment</b>  Introduction Claude Lajeunesse Chief Executive Officer Aerospace Industries Association of Canada	<b>Canadian Aerospace Environmental Technology Roadmap (CAETRM)</b>  Fassi Kafyeke Director Strategic Technology Senior Engineering Advisor Bombardier Aerospace	<b>Green Aviation Research and Development Network (GARDN)</b>  Hany Moustapha Senior Fellow and Manager Technology Programs Pratt & Whitney Canada

	<b>10:00 – 10:15</b>	<b>Coffee and networking</b>
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<b>Wed May 6</b>	<b>Technical Sessions</b>		
<b>ROOM</b>	<b>10:15 – 10:45</b>	<b>10:45 – 11:15</b>	<b>11:15 – 11:45</b>
<b>Delivered</b> <b>Computation &amp; Modelling 1</b>	<b>119</b> Theoretical Studies of the First-Row Transition Metals: Towards the Theoretical Design of Aerospace Metals  <i>Jean-Paul L. Prévost</i>  Department of Physics University of Ottawa	<b>120</b> Hybrid Finite Element Solution of Supersonic Flutter of Circular Cylindrical Panels  <i>Farhad Sabri et al</i>  Department of Mechanical Engineering École polytechnique de Montreal	<b>121</b> Flutter Identification in Aerospace Structures by Using Wavelet Analysis  <i>Molham H. Chikhalsouok et al</i>  Department of Mechanical and Industrial Engineering Concordia University
<b>Shakers</b> <b>Eco-design Initiatives</b>	<b>210</b> The Canadian Aviation Environment Technology Road Map  <i>Fassi Kafyeke</i> Bombardier Aerospace	<b>211</b> Design for Environment  <i>Bruce Parry</i> Bombardier Aerospace	<b>212</b> GARDN Noise Source Reduction Projects  <i>Mark Huising et al</i> Bombardier Aerospace
<b>Traders</b> <b>Environmental Issues</b>	<b>413</b> Fuel and Environmental Challenges for Transportation  <i>John Hu et al</i> Pratt & Whitney Canada	<b>414</b> Effect of additives on emissions  <i>Gregory Pucher</i> Royal Military College of Canada	<b>415</b> A Review of Some Advanced Engine Concepts for Environmental Impacts  <i>Jeff Bird et al</i> Gas Turbine Laboratory, Institute for Aerospace Research, NRC
<b>Set-up</b> <b>Aeroelasticity 1</b>	<b>311</b> Flexural oscillations of flexible airfoils in subsonic compressible flows  <i>Dan Mateescu</i> McGill University	<b>313</b> Investigation of the aero-elastic response of a Froude-scaled rotor system to representative ship motion using a 6 DOF Stewart motion platform  <i>F. Khouli et al</i> Carleton University	<b>312</b> Towards a high-fidelity aero-structural optimization capability  <i>Antoine Deblois et al</i> Bombardier Aerospace



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<b>Mainstream</b> <b>CFD Applications</b>	317 Application of actuator disk theory using commercial CFD codes for turboprop aircraft aerodynamic analysis <i>George Waller et al</i> Bombardier Aerospace	318 Improving USAF DATCOM predictions of aircraft nonlinear aerodynamics <i>Bilal A. Siddiqui et al</i> King Fahd University of Petroleum and Minerals, Saudi Arabia	<b>CASI Aerodynamics Section</b> <b>Annual Meeting</b>
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11:45 – 13:00	Lunch – On your own
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<b>Mulligan</b>	12:00 – 12:45	CASI AGM – CASI members only – Light lunch will be served
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<b>ROOM</b>	13:00 – 13:45		
<b>Signed Sealed &amp; Delivered</b>	<b>Highlight Lecture</b>	<b>Jim Henry</b> <b>Vice President, Technology Development</b> <b>Standard Aero</b>	<b>Adaptive Maintenance Systems for Fleet Management</b>

Wed May 6	Technical Sessions		
ROOM	14:00 – 14:30	14:30 – 15:00	15:00 – 15:30
<b>Signed</b> <b>Methods &amp; Modelling 2</b>	216 Performance Optimization of General Aviation Aircraft by Integration of High Power Propulsion System on Existing Airframe <i>Farooq Saeed et al</i> King Fahd University of Petroleum and Minerals, Saudi Arabia	217 H <sub>∞</sub> -based Loop Transfer Recovery Technique Applied to Propulsion-Controlled Aircraft <i>Yoshitsugu Hitachi et al</i> Institute for Aerospace Studies University of Toronto	218 Independent Verification and Validation of Aeronautical Systems Using Formal Methods <i>L. Rakesh et al</i> Visveswaraiah Technological University, India
<b>Delivered</b> <b>Gas Turbine S&amp;M (Propulsion)</b>	134 Crack growth simulations in complicated shapes of gas turbine critical components for damage tolerance application <i>Wieslaw Beres et al</i> Institute for Aerospace Research, NRC	135 Thermomechanical Fatigue Testing of Gas Turbine Materials - Challenges and Opportunities <i>David Dudzinski et al</i> Institute for Aerospace Research, NRC	136 Laser Fabrication of High Temperature Thin Film Sensors for Gas Turbines <i>D. Yang et al</i> Industrial Materials Institute, NRC
<b>Shakers</b> <b>Aircraft Product Development &amp; Process</b>	213 Bombardier Aerospace Strategic Technology: Preparing the Future of Business and Commercial Aviation <i>Fassi Kafyeke</i> Bombardier Aerospace	214 Bombardier Aerospace's Product Development Transformation <i>Robert May et al</i> Bombardier Aerospace	215 Lean and Green Aircraft Design Supported by a PLM Environment <i>Greg Huet et al</i> École polytechnique de Montréal



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<p><b>Traders</b></p> <p><b>Combustion</b></p>	<p><b>416</b> Dynamics of lean premixed turbulent flames and implications for modelling</p> <p><i>Frank T.C. Yuen et al</i></p> <p>Institute for Aerospace Studies University of Toronto</p>	<p><b>417</b> Shaping the Pre-combustion Flow in Hybrid Rocket Engines</p> <p><i>Wade Cherrington et al</i></p> <p>Continuum Aerospace, Inc.</p>	<p><b>418</b> Detecting Flame Front Structure in Turbulent Combustion Using Simultaneous Laser Diagnostics Techniques</p> <p><i>Alireza MahdaviFar</i></p> <p>Department of Mechanical and Material Engineering Queen's University</p>
<p><b>Deciders</b></p> <p><b>NDE &amp; Structural Health Monitoring 2</b></p>	<p><b>113</b> Ultrasonic phased-array and Eddy current array as approved methods for aircraft maintenance</p> <p><i>A. Greenbank et al</i></p> <p>Olympus NDT</p>	<p><b>115</b> Adhesive bond testing by laser induced shock waves</p> <p><i>S.E. Kruger et al</i></p> <p>Industrial Materials Institute, NRC</p>	<p><b>CASI Structures &amp; Materials Section</b></p> <p><b>Annual Meeting</b></p>
<p><b>Set-up</b></p> <p><b>Aerodynamic Design 1</b></p>	<p><b>319</b> Aerodynamic inverse design of airfoils in two dimensional viscous flows</p> <p><i>Raja Ramamurthy et al</i></p> <p>Concordia University</p>	<p><b>320</b> Intégration du modèle numérique de la structure d'une aile adaptable dans un processus d'optimisation des performances aérodynamiques</p> <p><i>Corentin Sainmont et al</i></p> <p>Ecole polytechnique Montréal</p>	<p><b>321</b> An automated multipoint optimization procedure for practical aerodynamic design problems</p> <p><i>Howard P. Buckley et al</i></p> <p>Institute for Aerospace Studies University of Toronto</p>
<p><b>Mainstream</b></p> <p><b>Unsteady Flows 1</b></p>	<p><b>322</b> Detached eddy simulations of massively separated pitching blades</p> <p><i>Steve Julien et al</i></p> <p>Université Laval</p>	<p><b>323</b> Implementation and validation of detached eddy simulation in the Bombardier Aerospace Navier-Stokes flow solver</p> <p><i>Kaveh Mohamed et al</i></p> <p>McGill University</p>	<p><b>324</b> Computational study of unsteady very low Reynolds number flow around a 2-D pitching airfoil</p> <p><i>M.R. Amiralaei et al</i></p> <p>Ryerson University</p>
<p><b>15:30 - 15:45</b></p>	<p><b>Coffee and Networking</b></p>		



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Wed May 6	Technical Sessions		
ROOM	15:45 – 16:15	16:15 – 16:45	16:45 – 17:15
<b>Delivered</b> <b>Coatings</b>	<p><b>122</b> Numerical evaluation of adhesion and fracture toughness properties of PVD coatings for erosion-resistant applications</p> <p><i>Mariusz Bielawski et al</i> Institute for Aerospace Research, NRC</p>	<p><b>123</b> Investigation of Thermally Grown Oxide Growth and Cracking in Isothermally Treated Thermal Barrier Coating</p> <p><i>Mauricio Buschinelli et al</i> Dept. of Mechanical and Aerospace Engineering Carleton University</p>	<p><b>124</b> Metal Coating of Structural Polymer-Matrix Composites</p> <p><i>M. Yandouzi et al</i> Department of Mechanical Engineering University of Ottawa</p>
<b>Shakers</b> <b>Methods &amp; Modelling 3</b>	<p><b>219</b> Finite Element Simulation and Experimental Study of Stress Peen Forming Process</p> <p><i>Hong Yan Miao et al</i> Aerospace Technology Manufacturing Centre, NRC</p>	<p><b>220</b> Controller for a Morphing Wing on a Bench Test</p> <p><i>Andrei Popov et al</i> École de technologie supérieure</p>	<p><b>221</b> Methods of Modeling of an Underwater Unmanned Vehicle (UUV)</p> <p><i>Julien Gobeaut et al</i> École de technologie supérieure</p>
<b>Traders</b> <b>Health and Life Cycle Management</b>	<p><b>407</b> Performance Enhancement through Advanced Interactive Electronic Technical Manuals</p> <p><i>Corey Prentis</i> Directorate of Aerospace Equipment Program Management (Transport &amp; Helicopter), DND</p>	<p><b>408</b> Data Mining-Based Prognostics for CF-18 Aircraft Components</p> <p><i>Marvin Zaluski et al</i> Institute for Information Technology, NRC</p>	<p><b>409</b> An Assessment of Turbine Nozzle Airfoil Profile Variation and its Effect on Gas Turbine Engine Maintenance</p> <p><i>Ray Woodason</i> Standard Aero Limited</p>
<b>Deciders</b> <b>Airworthiness &amp; Life Extension 2</b>	<p><b>118</b> Structural Data Recording Set (SDRS) Validation Study</p> <p><i>M.J. Tourond et al</i> Directorate of Technical Airworthiness and Engineering Support, DND</p>	<p><b>126</b> Helicopter Life Usage Monitoring Strategy for Canadian Forces Helicopters</p> <p><i>Catherine Cheung</i> Institute for Aerospace Research, NRC</p>	<p><b>127</b> Benefits of Fatigue Usage Monitoring and Associated Challenges: A CF-18 Case Study</p> <p><i>Gavin MacLeod et al</i> L-3 Communications Military Aviation Services Canada</p>
<b>Set-up</b> <b>Aerodynamic Design 2</b>	<p><b>327</b> Optimization of rocket nozzle design with the ejector effect</p> <p><i>Greg Chorkawy et al</i> Carleton University</p>	<p><b>328</b> Aerodynamic shape optimization of wings at transonic speeds</p> <p><i>Timothy M. Leung et al</i> Institute for Aerospace Studies University of Toronto</p>	<p><b>329</b> A discrete adjoint formulation for the stability derivatives using the Adjoint approach</p> <p><i>Charles A. Mader et al</i> Institute for Aerospace Studies University of Toronto</p>
<b>Mainstream</b> <b>Unsteady Flows 2</b>	<p><b>330</b> Computational investigation of unsteady flows over SFS 2 ship with a Bell Helicopter over the flight deck</p> <p><i>F. Zhang et al</i> Institute for Aerospace Research, NRC</p>	<p><b>331</b> Robins-Magnus effect - an attempt for a complete explanation</p> <p><i>Emil Marinchev et al</i> TU-Sofia, Bulgaria</p>	<p><b>332</b> Investigation into the unsteady loading of stores held within internal weapon bays</p> <p><i>Melissa Richardson et al</i> Institute for Aerospace Research, NRC</p>



# AERO9

56<sup>e</sup> Conférence en aéronautique et Réunion générale annuelle de l'IASC

Un passé glorieux, un avenir sans limites ...  
La commémoration de 100 ans de vol motorisé au Canada

18:30 – 22:00

Reception and Senior Awards Gala Dinner  
Canada Aviation Museum

## *Reception and Senior Awards Gala Dinner Canada Aviation Museum*

**Location:** Canada Aviation Museum on Aviation Parkway in Ottawa

**Time:** Reception begins at 6:30, Dinner at 7:30.

**Dress:** For men, a tuxedo would not be out of place and a business suit is fine as well. For ladies, evening wear is appropriate.

### Getting there

The Museum is on Aviation Parkway, close to the Ottawa River in the east end of Ottawa. If you would like instructions on getting there by car, please inquire at the Registration and Administration Room.

### Arrival at the Museum

You may arrive any time after 6 pm and you are welcome to tour the Museum and enjoy the exhibits at your leisure. Those attending the Conference at the Brookstreet Hotel will be taken to the Museum via motor coach.

The buses will depart the Hotel at 5:40 pm sharp. They will depart the Museum for the return trip to the Hotel as the evening winds down, the first one leaving around 11:00.

If you have received a Conference name badge, we ask that you wear it. It will make it easier for everyone if freshly-introduced guests are not called upon to remember the names of every new face they meet.

### The Reception

The Reception begins at 6:30 pm and will end at 7:30. Hors d'oeuvres will be served and there will be a cash bar. You may continue to walk among the exhibits and enjoy the company of friends and associates.

### The Dinner

The Dinner begins at 7:30 pm. The round tables (most with seating for 8 guests) will be arranged near the centre of the Museum. There will be no head table, and the Awards will be on display near the dining area. Dinner service will begin immediately after brief welcoming remarks from CASI President Nashed Youssef of Pratt & Whitney Canada. As the dessert and coffee are served, probably around 9:00 pm, the formal part of the evening will get under way.

### The Presentations

The presentations will be made in the area where the Awards have been on display. The general procedure is for President Youssef to announce the Award, provide a brief summary of the achievements of the recipient, and invite the recipient up to the microphone to say a few words. So as to keep the duration of the formalities within reasonable limits, recipients are asked to limit their remarks to not more than 3 minutes.

The presentations will take about one to one and one-half hours. Following the presentation of the McKee Trophy, President Youssef will make a few concluding remarks to end the formal part of the Dinner. Guests may resume their conversations and tour the exhibits for as long as they wish.

### Return to the Hotel

The first bus will depart as soon as guests are ready to leave. A last bus will remain for as long as necessary to ensure that all guests are returned safely to the Hotel.

# BOMBARDIER

We are very grateful to Bombardier Aerospace for their generous sponsorship of the Senior Awards Reception and Gala Banquet



# AERO9

56<sup>th</sup> CASI Aeronautics Conference and Annual General Meeting

An accomplished past, a boundless future ...  
Celebrating 100 Years of Powered Flight in Canada

Aerospace Structures & Materials	Aircraft Design & Development	Aerodynamics	Propulsion	Unmanned Aerial Vehicles
Plenary Event		Social Event		Coffee and Networking/Lunch

<b>Thu May 7</b>	<b>07:30 – 08:15</b>	<b>Coffee and networking</b>		
<b>ROOM</b>				
<b>Founders</b>	Registration and Administration – 07:30 – 12:30 and 13:30 – 16:30			
<b>Strategy</b>	Speaker Ready Room – until noon			
<b>Fair Play</b>	VIP Room – until 2 pm			

<b>ROOM</b>	<b>08:15 – 09:45</b>		
<b>Signed Sealed &amp; Delivered</b>	<b>Highlight Lecture</b>	<b>Cord-Christian Rosow Head, Institute of Aerodynamics and Flow Technology</b>	<b>Aerodynamic Research at DLR – Science and Applications</b>

	<b>09:45 – 10:15</b>	<b>Coffee and networking</b>	
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<b>Thu May 7</b>	<b>Technical Sessions</b>		
<b>ROOM</b>	<b>10:15 – 10:45</b>	<b>10:45 – 11:15</b>	<b>11:15 – 11:45</b>
<b>Shakers</b> <b>Aircraft Design Education</b>	222 Aircraft Design as an Integration Project <i>Jean-François Viau</i> Bombardier Aerospace	223 Advantages and Limitations of Multi-stop Operations: University of Bristol 2009 Aircraft Design Student Project <i>Salman Iqbal et al</i> University of Bristol, UK	CASI Aircraft Design and Development Section Annual Meeting
<b>Mulligan</b> <b>Aeroelasticity 2</b>	333 An aeroelastic model for helicopter rotors in hover and forward flight conditions <i>J.C. Shu et al</i> Institute for Aerospace Research, NRC	334 Effects of inertia and boundary layer tripping on aeroelastic, self-excited pitch oscillations of an airfoil <i>Vincent Métivier et al</i> Université Laval	335 Aeroelastic simulations of the NREL wind turbine using a discrete vortex method coupled with a non-linear beam model <i>Sean McTavish et al</i> Carleton University
<b>Traders</b> <b>Open Plenary and Discussion</b>	419 Open Plenary and Discussion <i>Chair: Jeff Bird</i>	This session will explore questions and issues raised during the Propulsion Symposium	In addition, short talks about work in progress are invited.
<b>Decideers</b> <b>NDE &amp; Structural Health Monitoring 3</b>	131 Improving Probability of Detection of Bolt Hole Eddy Current Inspection <i>Holly Lemire et al</i> Royal Military College of Canada	132 Estimating probability of detection from in-service inspection data <i>M. Khan et al</i> Institute for Aerospace Research, NRC	



<b>Set-up</b> <b>Composites 2</b>	110 Feasibility Study of Closed Cavity Bag Moulding (CCBM) for Novel Mouldless Manufacturing of Carbon Epoxy Composites <i>M. Mahendran et al</i> Department of Mechanical and Aerospace Engineering, Carleton University	111 Efforts to improve on ductility of metal matrix composites <i>T. Wood et al</i> Institute for Aerospace Research, NRC	112 A Canadian Approach and Solution to Water Ingress Problems in CF188 Honeycomb Composites <i>P.C. Hungler et al</i> Royal Military College of Canada
<b>Mainstream</b> <b>Aerodynamic Design 3</b>	336 Coordination of multidisciplinary distributed analyses and optimizations <i>Christophe Tribes et al</i> Ecole polytechnique de Montréal	337 What can numerical optimization teach us about induced-drag <i>J.E. Hicken et al</i> Institute for Aerospace Studies University of Toronto	338 An innovative device for the CRJ-1000 Regional Jet high-lift system <i>Fassi Kafyeke et al</i> Bombardier Aerospace
<b>ROOM</b>	<b>12:00 – 13:45</b>		
<b>Signed Sealed &amp; Delivered</b>	<b>Turnbull Lecture</b>	<b>Bjarni Tryggvason Astronaut and Pilot</b>	<b>Flight: Fast and High, Low and Slow</b>

## Organising Committee / Comité d'organisation

### Eric Laurendeau

Chair, Aerodynamics Symposium  
*Bombardier Aerospace*

### Ken McRae

Chair, Aerospace Structures & Materials Symposium  
*Defence Research and Development Canada*

### Askin T. Isikveren

Chair, Aircraft Design & Development Symposium  
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### Jeff Bird

Chair, Propulsion Symposium  
*Pratt & Whitney Canada Corp.*

### Peter W. Maddocks

Chair, Unmanned Aerial Vehicles Symposium  
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### Geoffrey Languedoc

Conference Logistics  
*Executive Director, Canadian Aeronautics and Space Institute*