FINAL PROGRAM MATRIX

SUNDAY 24 February 2019

1700 - 1930	**Registration opens** – Crown Promenade Foyer
1800 - 1930	**Welcome Reception** – Crown Promenade Foyer

MONDAY 25 February 2019

0700-1730	**Registration opens** – Crown Promenade Foyer
0805-1005	**Opening Plenary session –** Crown Promenade Room 1&2
0805 – 0815	**CONGRESS OPENING ADDRESS** Sonja Jenkinson, (Defence Aviation Safety Authority)
0815 – 0835	**PLENARY PRESENTATIONS** **Chair:** Dr Arvind Sinha, (Capability Acquisition and Sustainment Group)
0835 – 0925	**RESEARCH** Dr Todd Mansell, Chief Defence Scientist, (Defence Science and Technology Group)
0925 – 1000	**ACADEMIA** Prof Phil Webb (Cranfield Univeristy), Prof Pier Marzocca (RMIT University), Prof Raman Singh (Monash University) and Prof KC Wong (Sydney University)
	INDUSTRY 1 Steve Chisholm, Vice President, BCA Structures Senior Chief Engineer (Boeing Commercial Airplanes)
1010- 1030	**Morning tea** – Crown Promenade Foyer

1030-1210 (20min presentation inclusive of 5-minute Q&A) — **Concurrent session 1**

AERO 1	AERO 2	AERO 3	AERO 4	HUMS	ISSFD 1	ISSFD 2	ISSFD 3
STRUCTURES AND MATERIALS 1	**AERODYNAMICS 1**	**SIMULATION**	**AIR OPERATIONS**	**OPENING AND KEYNOTE 1**	**ATTITUDE DYNAMICS & CONTROL 1**	**FORMATION FLYING & SATELLITE CONSTELLATIONS 1**	**ASTRODYNAMICS 1**
Chair:	**Chair:**	**Chair:**	**Chair:**	**Chair:**	**Chair:**	**Chair:**	**Chair:**
Promenade Room 1	**Promenade Room 2**	**Promenade Room 3**	**M1 & M2**	**M3 & M4**	**M6**	**M7 & M8**	**M9 & M10**
				HUMS2019 Opening Address **Joanna Kappas** ***Defence Science and Technology Group***			
6 Degree of Freedom Dynamic Demonstrator for Structural Testing **Angus Manning** ***Defence Science and Technology Group***	A Rapid, Low-Cost Approach for Airplane Aerodynamic Database Development Using CFD and Wind Tunnel Data	Review of Methodologies for Aircraft Sensors Fault Detection and Correction **Omar Hazbon Alvarez**	Cross-correlation-based Robust Object Tracking in Aerial Videos **Asanka Perera**	**KEYNOTE PRESENTER** Presentation from the Director, US Air Force Life Cycle Management Centre **Rafael A. Garcia**	**KEYNOTE PRESENTER** Enhancement of the Spacecraft Attitude Dynamics Capabilities via Combination of the Inertial Morphing and	Accurate Osculating/Mean Orbital Elements Conversions for Spaceborne Formation Flying	

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		Niall O'Shea ***Boeing Aerostructures Australia***	***Universidad Pontificia Bolivariana***	***University of South Australia***	**Air Force Life Cycle Management Centre**	Reaction Wheels **Pavel Trivailo** ***RMIT University***	**Martin Lara** ***Politecnico Di Milano***	
	Acoustic Metamaterials for Aeronautical Applications **Jingwen Zhao** ***RMIT University***	Aerodynamic testing using the Defence Science and Technology Group wind tunnels **Malcolm Jones** ***Defence Science and Technology Group***	A Simulation Environment for Air-vehicle Swarming **Robert Porter** ***Defence Science and Technology Group***	Rewards-based evolutionary swarm UAVs on search and rescue mission **Faqihza Mukhlish** ***University of New South Wales***			Spatial Formation of High Inclined Orbits with Use of Gravity Assists **Alexey Grushevskii** ***Keldysh Institute of Applied Mathematics of RAS***	Connecting Low-Energy Orbits in the Saturn system **Elena Fantino** ***Khalifa University of Science and Technology***
	An Empirical Model to Predict the Effect of Thermal Exposure on the Tensile Mechanical Properties of 7000 Aluminium Alloys **Suzana Turk** ***Defence Science and Technology Group***	Aerodynamics of Winglets with Passive Flow Control **Nicolas Findanis** ***Pentair***	Digital Thread Implementation at Boeing Aerostructures Australia **Andrew Sheppard** ***Boeing Aerostructures Australia***	UAV navigation using visual waypoints: A hardware-in-the-loop approach **Aakash Dawadee** ***Defence Science and Technology Group***	Software Development to Deliver a Super Hornet and Growler Deployable Engine Life Management Capability **Robert Findlay** ***BAE Systems***	TRICOM-1R Flight Dynamics Analysis: Angular Momentum Oscillation of Spinning Satellite in Highly Elliptical Orbit **Takayuki Hosonuma** ***The University of Tokyo***	The Tandem-L Formation Flying Mission **Ralph Kahle** ***German Aerospace Center DLR / GSOC***	Evaluation of Transition Performance to Jupiter Orbit using Electrodynamic Tether System **Hirohisa Kojima** ***Tokyo Metropolitan University***
	Analysis of static load calibration data using neural networks: case study **Kathryn Niessen** ***Defence Science and Technology Group***	The Effect of Splitter Plate(s) Attached with Square Cylinder in Turbulent Flow **Nahid Alemi Kermani** ***University of New South Wales***	Modelling of a small internal combustion aero engine **Ioan Porumb** ***University of South Australia***	***SPECIAL PRESENTATION LTCOL Keirin Joyce Australian Army***	Considerations for Obtaining Tangible Operational and Maintenance Benefits from Aircraft Health Monitoring Systems in a Big Data Environment **Stephan Hall** ***Celeris Aerospace Canada***	Drag-Free and Attitude Control System in LEO using Cold Gas Propulsion System: a feedback from the MICROSCOPE mission **Stéphanie Delavault** ***Centre National d'Etudes Spatiales***	Sentinel-5P Loose Formation Flying with Suomi-NPP: LEOP, Orbit Acquisition and Orbit Maintenance **Dirk Kuijper** ***CGI Deutschland Ltd. & Co. KG***	On-Orbit Mass Property Estimation for Cargo Spacecraft using Operation Data by Machine Learning **Ai Noumi** ***Japan Aerospace Exploration Agency***
	Prediction of in-flight loading using neural networks: case study **Daniel Franke** ***Defence Science and Technology Group***				Helitune Integrated Vehicle Health Monitoring – Scalable Aircraft Health Monitoring **Paul Hutchinson** ***Helitune***	Adaptive Attitude Tracking Control with Parameter Convergence in the Absence of Persistent Excitation **Hongyang Dong** ***Beihang University***	Optimization of Multiple-Impulse Perturbed Cooperative Rendezvous for Spacecraft **Zhen-Yu Li** ***National University of Defense Technology***	
1220-1310	**Lunch -** Crown Promenade Foyer							
1310-1450 **(20min presentation inclusive of 5-minute Q&A)**	**Concurrent session 2**							
	AERO 1	**AERO 2**	**AERO 3**	**AERO 4**	**HUMS**	**ISSFD 1**	**ISSFD 2**	**ISSFD 3**
	STRUCTURES AND MATERIALS 2	**AERODYNAMICS 2 AND AEROSPACE DESIGN 1**	**REGULATIONS, POLICY AND AIRWORTHINESS 1**	**UNMANNED AERIAL SYSTEMS 1**	**PHM, DATA ANALYTICS & REGULATIONS**	**ATTITUDE DYNAMICS & CONTROL 2**	**FORMATION FLYING & SATELLITE CONSTELLATIONS 2**	**ASTRODYNAMICS 2**

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Chair:	Chair:	Chair:	Chair:	Chair:	Chair:	Chair:	Chair:
Promenade Room 1	**Promenade Room 2**	**Promenade Room 3**	**M1 & M2**	**M3 & M4**	**M6**	**M7 & M8**	**M9 & M10**
Analysis of the life-limiting location of a Military Transport Aircraft Fatigue Test **Kai Maxfield** ***Defence Science and Technology Group***	Hazard Assessment of Wind Turbine Wakes Turbulence: Initial Results **Jorg Schluter** ***Deakin University***	An evaluation of the Australian Civil Aviation Safety Authority (CASA) SMS Framework using the DEMATEL method **Richard Yeun** ***RMIT University***	Concept Instrumentation for Flapping Wing UAVs and MAVs **Alex Lefik** ***University of South Australia***	Introducing CBM on M113AS4 Power pack utilising HUMS data **Vishwanath Wickramanayake** ***LEA CASG***	Satellite Attitude Control with a Six-Control Moment Gyro cluster tested under Microgravity Conditions **Hélène Evain** ***Centre National d'Etudes Spatiales***	Orbital design of formation flight to keep relative distance applied to space gravitational wave antenna B-DECIGO **Shuhei Matsushita** ***The University of Tokyo***	Sun-synchronous repeat ground tracks and other useful orbits for future space missions **Sung Wook Paek** ***Samsung Sdi***
C-130J-30 Wing Fatigue Test - Test Interpretation and Implementation **Ross Stewart** ***QinetiQ***	Low speed aerodynamics of pitching airfoil using Proper Orthogonal Decomposition **Arpan Das** ***RMIT University***	Coopetition strategies for Airlines Industry based on Game theory **Iryna Heiets** ***RMIT University***	Proposed workflow to allow Artificial Intelligent Agents for Airborne Systems and Equipment Certification **Bernardo Coelho** ***Leap Australia***	Leveraging Digital Clones for Prognostics Health Management **Melissa McReynolds** ***Sentient Science***	Dynamical Modeling of Coupled Orbit-Attitude Motion of a Rigid Body in the Gravity of an Asteroid Considered as a Polyhedron **Yue Wang** ***Beihang University***	Deployment and Maintenance of Solar Sail-Equipped Cubesat Formation in LEO **Alexander Kharlan** ***Skolkovo Institute of Science and Technology***	Using Telemetry to Navigate the MarCO Cubesats to Mars **Brian Young** ***Jet Propulsion Laboratory / California Institute of Technology***
Damping properties of cork/fibre reinforced polymer composites **Jose Silva** ***RMIT University***	Bio-inspired flapping wing micro air vehicles material properties and evolutionary fabrication **Nahid Chitaz** ***University of New South Wales***	Autonomy from a Safety Certification Perspective **Reece Clothier** ***Boeing Research & Technology***	A Case Study in Uncertainty Quantification of UAS Behaviours against Operational Requirements **Valtteri Kallinen** ***Queensland University of Technology***	Defence Aviation Safety Authority (DASA) perspectives on HUMS (TBC) **Rashmin Gunaratne** ***Defence Aviation Safety Authority***	The Pioneer 10 Spin Anomaly as an Observation Artefact **Craig Watkins** ***Informative Technology Innovations***	A Control Theoretical Analysis of Formation Flight with Inter-satellite Lorentz Forces **Hao Zhang** ***Technology and Engineering Center for Space Utilization, Chinese Academy of Sciences***	Design of quasi-satellite orbits: Analytical alternatives **Martin Lara** ***University Of La Rioja***
Derivation of shell knockdown factors of grid-stiffened cylinders with various thickness ratios **Han–Il Kim** ***Chungnam National University***	CFD-Coupled 6-DOF Attitude & Trajectory Analysis for Hypersonic Air Vehicles **Julian Fernando Gonzalez Escalante**	Efficient procurement of Civil Aviation Authorities' products and services using airworthiness recognition **James Herringer** ***Defence Aviation Safety Authority***	Wind tunnel experimental test and performance analysis for Bi-modal unmanned underwater and air vehicle **Dian Guo** ***RMIT University***	Defence stakeholder elicitation on military platform current and future sustainment challenges **David Holmes** ***Defence Science and Technology Group***		HRWS -- An Ambitious 4+ Satellite Formation Flying Mission **Sofya Spiridonova** ***German Aerospace Center (DLR)***	
Disruptive but necessary new analyses of buckling of circular arches, rings, and tubes under external pressure **Leonard John Hart-Smith** ***The Boeing Company, California***	Current knowledge of corrugated dragonfly wing structures and future measurement methodology **Nasim Chitsaz** ***University of South Australia***	Improved Technical Airworthiness Taxonomy: Capturing Business Intelligence to Support an Effective Safety Management System **Ben Whiting**	An investigation into the effects of rotor wake interference on multirotor UAS forward flight performance **Sam Prudden** ***RMIT University***	Using K-Nearest-Neighbours (KNN) Machine Learning Technique to Classify Archived Helicopter Wear Debris Data **Eric Lee**		Flex Tandem with Senintel-3: Control Concept **Itziar Barat** ***Deimos @ Esa***	

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			Defence Aviation Safety Authority		***Defence Science and Technology Group***			
1500-1520	**Afternoon tea –** Crown Promenade Foyer							
1520-1700 **(20min presentation inclusive of 5-minute Q&A)**	**Concurrent session 3**							
	AERO 1	**AERO 2**	**AERO 3**	**AERO 4**	**HUMS**	**ISSFD 1**	**ISSFD 2**	**ISSFD 3**
	STRUCTURES AND MATERIALS 3	**AEROSPACE DESIGN 2, AND HUMAN FACTORS**	**REGULATIONS, POLICY AND AIRWORTHINESS 2**		**STRUCTURAL LOADS AND HEALTH MONITORING**	**ORBIT DETERMINATION 1**	**MISSION ANALYSIS & DESIGN 3**	**FLIGHT DYNAMICS OPERATIONS 1**
	Chair:	**Chair:**	**Chair:**		**Chair:**	**Chair:**	**Chair:**	**Chair:**
	Promenade Room 1	**Promenade Room 2**	**Promenade Room 3**		**M3 & M4**	**M6**	**M7 & M8**	**M9 & M10**
	Developing Experimental Techniques for Detecting Composite Failure Modes and Fatigue Crack Growth in a Metallic Aircraft Panel **Michael Forsey** ***Fortburn***	Graphene –Applications within the Aerospace Domain and its Potential to provide Corrosion Protection to Metallic Materials **Stephen Russo** ***QinetiQ***	Intelligent Maintenance in Asset Management of Aircraft **Doug McPherson** ***Memko***		A viable opportunity for fielding an aircraft structural health monitoring system **Marcel Bos** ***Netherlands Aerospace Centre NLR***	Meteosat ranging antennas relocation: performance assessment and compensation using telescopes data service **Stefano Pessina** ***Eumetsat***	Dawn's final mission at Ceres: Navigation and Mission Design Experience **Dongsuk Han** ***Jet Propulsion Laboratory / California Institute of Technology***	Multi-Objective Optimisation of NRHO-LLO Orbit Transfer via Surrogate-Assisted Evolutionary Algorithms **Matthew Rozek** ***RMIT University***
	Additively Manufactured Ti-6Al-4V Replacement Parts – Cutting the Gordian Knot **Rhys Jones** ***Monash University***	Performance of Electric Vertical Take-off and Landing (EVTOL) Hovering Craft **Graham Dorrington** ***RMIT University***	Protecting infant airline passengers from injury in a severe but survivable accident **Adam Shrimpton** ***Defence Aviation Safety Authority***		Software Assisted Hawk Mk127 Strain Gauge Serviceability Assessment **Josh McFarlane** ***BAE Systems Australia***	Consider Probability Hypothesis Density Filtering for Multiple Space Objects Tracking **Yang Yang** ***RMIT University***	Aerobraking the ExoMars TGO: The JPL Navigation Experience **Dongsuk Han** ***Jet Propulsion Laboratory / California Institute of Technology***	Optimized transfers between Earth-Moon invariant manifolds **Laurent Beauregard** ***Isae-supaero***
	Enhanced Teardown of a PC-9/A Wing Main Spar with Misdrills **Ben Main** ***Defence Science and Technology Group***	Virtual Design Optimisation and Testing (VDOT) Framework for Innovative Sustainment **Adrian Orifici** ***RMIT University***	Qualifying the Digital Pilot **Reece Clothier** ***Boeing Research & Technology***		OPERAND: An Innovative Multi-Physics Approach to Individual Aircraft Tracking **Oleg Levinski** ***Defence Science and Technology Group***	Aeolus Orbit Control Strategy: Analysis and Final Implementation **Miguel Martin Serrano** ***Scisys***	Sentinel-3 orbit control strategy **Daniel Aguilar Taboada** ***Eumetsat***	
	Forensic Analysis of Damage found during the Teardown of a Military Transport Aircraft Fatigue Test Article **Douglas Williams** ***Defence Science and Technology Group***	Aircraft safety and passenger anthropometry – evaluating emergency egress times of different passenger profiles **Damien Melis** ***RMIT University***	Ensuring Effective Safety Management System (SMS) Evaluation **Joshua Hamson** ***Defence Aviation Safety Authority***		Effects of Atmospheric Excitation on Vibration Based Condition Monitoring Methods for Hybrid-Electric Aircraft Propulsion Systems **Philipp Schildt** ***Siemens***	Navigation Challenges during ExoMars Trace Gas Orbiter Aerobraking Campaign **Gabriele Bellei** ***Deimos Space***	Aeroheating test of re-entry capsule in Hypersonic High-Reynolds number flow **Hideyuki Tanno** ***Japan Aerospace Exploration Agency***	

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	Fracture analysis of Composite scarf repairs-A simple method **Amar Garg** ***Boeing Aerostructures Australia***	Using the lead crack concept to reduce durability test duration **Loris Molent** ***Defence Science and Technology Group***	Human Error Classification and Management in Aviation Design – A Critical Review **Eranga Batuwangala** ***RMIT University***		Low Power, Low Cost, Lightweight, Multichannel Optical Fiber Interrogation Unit for Structural Health Management of Rotor Blades **Edgar Mendoza** ***Redondo Optics***	Estimating atmospheric density profiles using orbit determination with a focus on JUICE and Cassini **Anne Hickey** ***Sapienza University of Rome***		
1800-2300	**2019 Congress Dinner at Aerial** *(details below)*							
	AIAC 2019 Congress Dinner Join us to conclude the first two days of the Congress at Aerial. Situated at South Wharf **Time:** 6:00pm – 11:00pm **Location:** 17 Dukes Walk, South Wharf VIC 3006. **Includes:** Canapes, Entrée, Main Course, Dessert with tea and coffee **DINNER KEYNOTE PRESENTER (20mins)** **Chair:** Dr Arvind Sinha, (Capability Acquisition and Sustainment Group) Sandy Tirtey, Director, Business Development (Australia), (Rocket Lab)							

FINAL PROGRAM MATRIX

TUESDAY 26 February 2019

0800-0900 — **Registration opens** – Crown Promenade Foyer

0815-1020 — **PLENARY PRESENTATIONS –** Crown Promenade Room 1&2

Chair: Dr Arvind Sinha, (Capability Acquisition and Sustainment Group)

0815 - 0835 — **DEFENCE**
Shane Fairweather, First Assistant Secretary, Helicopter Systems Division Capability Acquisition and Sustainment Group

0835-0855 — **REGULATOR**
AIRCDRE Jason Agius, Director General, Defence Aviation Safety Authority

0855—0955 — **INDUSTRY 2**
Billy Fredriksson, Former SVP and CTO, (Saab AB) and Saleem Zaheer, Vice President Global Business Development, (XTI Aircraft Company)

0955- 1010 — **EDUCATION**
Con Doolan, Professor and Deputy Head of School (Education), UNSW Mechanical and Manufacturing Engineering (UNSW)

1020- 1040 — **Morning tea - Promenade Foyer**

1040-1220 (20min presentation inclusive of 5-minute Q&A) — **Concurrent session 4**

AERO 1	AERO 2	AERO 3	AERO 4	HUMS 1	ISSFD 1	ISSFD 2	ISSFD 3
STRUCTURES AND MATERIALS 4	**PROPULSION 1**	**AVIONICS, ATM AND MISSIONS SYSTEMS 1**	**UNMANNED AERIAL SYSTEMS 3**	**KEYNOTE 2**	**ORBIT DETERMINATION 2**	**TRAJECTORY DESIGN & OPTIMIZATION 2**	**GUIDANCE, NAVIGATION AND CONTROL**
Chair:	**Chair:**	**Chair:**	**Chair:**	**Chair:**	**Chair:**	**Chair:**	**Chair:**
Promenade Room 1	**Promenade Room 2**	**Promenade Room 3**	**M1 & M2**	**M3 & M4**	**M6**	**M7 & M8**	**M9 & M10**
Investigating meso-mechanical failure in composite materials using the Semi-Conformal Embedded Technique (SET) **Nayeem Chowdhury** ***University of New South Wales***	A novel image processing method to identify flame structure **Dahe Gu** ***Defence Aviation Safety Authority***	Cognitive Human-Machine Interfaces and Interactions for Multi-UAV Operations **Yi Xiang Lim** ***RMIT University***	Challenges to the Risk-based Regulation of Unmanned Aircraft Systems **Achim Washington** ***RMIT University***	**KEYNOTE PRESENTER** Strategic Value and Tactical Challenges of Implementing Prognostics and Health Management (PHM) Systems **James Cycon** ***Lockheed Martin Corporation***	Optimizations of Autonomous Orbit Determination for a Deep-Space CubeSat **Boris Segret** ***Esep - Paris Observatory***	Rendezvous Design in a Cislunar Near Rectilinear Halo Orbit **Emmanuel Blazquez** ***Isae-Supaéro***	Navigating MarCO, the First Interplanetary CubeSats **Tomas Martin-mur** ***Jet Propulsion Laboratory / California Institute of Technology***
Nonlinear vibration analyses of shear-deformable composite plates under combined thermal, random acoustic, and supersonic aerodynamic loads	The Szorenyi Three-Chamber Rotary Engine Concept **Peter King** ***Rotary Engine Development Agency***	A Novel Navigation Performance Augmentation Framework for UAS in urban environments **Suraj Bijjahalli** ***RMIT University***	Acoustic Characterisation of Low-Reynolds Number Multi-rotor UAS Propellers **Nicola Kloet** ***RMIT University***		A Study of Orbit estimation for a Spacecraft by Using the Re-duced order Filter **Tsutomu Ichikawa**	Transfer from a Lunar Distant Retrograde Orbit to Mars through Lyapunov Orbits **Irene Cavallari and Robin Petitdemange**	Flying gyroless around Mars: a SW update for Mars Express **Juan Manuel Garcia** ***GMV INSYEN at ESA/ESOC***

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	Hong – Beom Lee ***Chungnam National University***					***Japan Aerospace Exploration Agency***	***Isae-Supaero***	
	Mechanical and thermal properties of multifunctional composites fabricated by vacuum-assisted resin infusion **Nattanan Chulikavit** ***RMIT University***	Low-NOx Flameless Combustor for Gas Turbines: An Experimental and Numerical Study **Farid Christo** ***Deakin University***	Achieving Unmanned Aircraft System Sense-and-Avoid by Multi Sensor Data Fusion **Luthfi Nurhakim** ***RMIT University***	Inserting Virtual Dynamic Entities into the UAV Challenge Medical Express **Robert Porter** ***Defence Science and Technology Group***	Extending the Helicopter System Efficiency by Integrating HUMS with Crew Fatigue/Stress Real-Time Monitoring Capabilities **Marco Gazzaniga** ***Leonardo Helicopters***	Uncertainties in GPS-based operational orbit determination of Copernicus Sentinel satellites **Petr Kuchynka** ***GMV INSYEN at ESA/ESOC***	Design of disposal orbits for high altitude spacecraft with a semi-analytical model **Francesca Scala** ***Politecnico di Milano***	Development of a GPS receiver for geosynchronous satellites toward autonomous operation **Yu Nakajima** ***Japan Aerospace Exploration Agency***
	The Effect of Corrosion Inhibiting Compounds and Faying Surface Sealant on Single-Shear Lap Joints **Rachelle Ferber** ***The University of Adelaide***	Numerical Analysis of Thermal Loading in Dual-Bell Rocket Nozzles **Christopher Hewitt** ***RMIT University***	Damage assessment in composite and bonded airframes **Rhys Jones** ***Monash University***	**SPECIAL PRESENTATION:** A Presentation on Maritime Tactical Unmanned Aerial Systems, New Capability and New Challenges Driving Innovation **Philip Woodward** ***Royal Australian Navy***	E-7A AEW&C Wedgetail : Boeing HUMS data analysis and applications for sustainment initiatives **Dean Christiansen Boeing Global Services & Brooke Griffin, *Boeing Defence Australia Ltd***	Orbital Pursuit-Evasion Games with Incomplete Information in the Hill Reference Frame **Zhen-Yu Li** ***National University of Defense Technology***	Reachability Study for Spacecraft Maneuvering from a Distant Retrograde Orbit in the Earth-Moon System **Changxuan Wen** ***Technology and Engineering Center for Space Utilization***	
		Experimental characterization of a small internal combustion aero engine **Ioan Porumb** ***University of South Australia***	Cognitive Human-Machine Interfaces and Interaction for Terminal Area Traffic Management **Nichakorn Pongsakornsathien** ***RMIT University***		No Fault Found or More Correctly, Fault Not Found: its Causes, its Cost and its Correction **John Baker** ***Copernicus Technology***	Coplanar Maneuvers to Observe an Assigned Site Based on Satellite Viewing-Swath Geometry Analysis **Luyi Yang** ***National University of Defense Technology***		
1230-1315	**Lunch –** Crown Promenade Foyer							
1315-1435 **(20min presentation inclusive of 5-minute Q&A)**	**Concurrent session 5**							
	AERO 1	**AERO 2**	**AERO 3**	**AERO 4**	**HUMS**	**ISSFD 1**	**ISSFD 2**	**ISSFD 3**
	STRUCTURES AND MATERIALS 5	**ADDITIVE MANUFACTURING**		**UNMANNED AERIAL SYSTEMS 4**	**DIAGNOSTICS AND PROGNOSTICS 1**	**ORBIT DYNAMICS & CONTROL**	**MISSION ANALYSIS & DESIGN 1**	**FLIGHT DYNAMICS OPERATIONS 2**
	Chair:	**Chair:**		**Chair:**	**Chair:**	**Chair:**	**Chair:**	**Chair:**
	Promenade Room 1	**Promenade Room 2**	**Promenade Room 3**	**M1 & M2**	**M3 & M4**	**M6**	**M7 & M8**	**M9 & M10**
	OPERAND: A Smart Diagnostics Capability for Identification of Control Surface Free-Play **Michael Candon**	Additive metal solutions to aircraft skin corrosion **Neil Mathews** ***RUAG Australia***		Collision Avoidance with Rules of the Air Compliance for Unmanned Aircraft	Time Series Reconstruction using a Bidirectional Recurrent Neural Network based	Effect of the Air Drag Perturbation in the Eccentricity Vector for Very Low Earth Orbits **Javier Sanchez**	Australian Space Port for Small Satellites: Launch Concept **Kate Ketdam**	Bepi Colombo: Flight Dynamics Operations during Launch and Early Orbit Phase **Francecso Castellini**

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	RMIT University			Detect and Avoid **Timothy Molloy** ***Queensland University of Technology***	Encoder-Decoder Scheme **Chris Mechefske** ***Queens University Canada***	***GMV INSYEN at ESA/ESOC***	***RMIT University***	***European Space Agency***
	OPERAND: Aeroelastic Model Updating for Global Airframe Response Estimations from Limited Flight Data Measurements **Nishit Joseph** ***RMIT University***	Qualification of Material Microstructure and Mechanical Performance of Aerospace Additive Manufacturing Parts using Predictive Modeling Tool **Behrooz Jalalahmadi** ***Sentient Science***		Evaluation of LIDAR and X-Band Radar Sensors in a Particle-Dense Environment **Ricardo Cannizzaro** ***Defence Science and Technology Group***	Gear-Bearing Fault Detection Based on Deep Learning **Wenyi Wang** ***Defence Science and Technology Group***	Dynamical evolution analysis of standard geostationary transfer orbits injected by Chinese launchers **Yue Wang** ***Beihang University***	Risk reduction and collision risk thresholds for missions operated at ESA **Klaus Merz** ***European Space Agency***	ExoMars 2016 – Flight Dynamics commanding during the aerobraking operations for the Trace Gas Orbiter **Robert Guilanyà Jané** ***GMV INSYEN at ESA/ESOC***
	OPERAND: Aircraft Buffet Load Prediction via Artificial Neural Networks **Michael Candon** ***RMIT University***			Impact of gusts on battery performance in a small electric UAV using hardware-in-the-loop simulation **Amrit Sethi** ***University of Sydney***	Cyclostationary-based tools for bearing diagnostics of helicopter planetary gearboxes **Alexandre Mauricio** ***KU Leuven Belgium***	Simple and efficient algorithm to search through the Gaia catalogue **Klaas Vantounhout** ***CGI Deutschland Ltd. & Co. KG***	Leveraging Mars Aerobraking Experience for the Venus Environment **Mark Wallace** ***Jet Propulsion Laboratory / California Institute of Technology***	ExoMars 2016 – Flight Dynamics operations for targeting the Schiaparelli module EDL and the Trace Gas Orbiter Mars orbit insertion **Robert Guilanyà Jané** ***GMV INSYEN at ESA/ESOC***
	OPERAND: Virtual Sensor Expansion of Flight Measurement Data using Calibrated GVT Models **Stephan Koschel** ***RMIT University***			Indoor Free-flight Experimentation of a Multi-Rotor Uninhabited Aircraft using a Beacon Positioning System **Chatura Nagahawatte** ***Defence Science and Technology Group***	Separation of mechanical source vibrations under variable speed conditions **Dany Abboud** ***Safran Tech***		Machine Learning for Atmospheric Drag Prediction of LEO satellites **Hiroshi Kato** ***Japan Aerospace Exploration Agency***	Past Results and Future Missions of STARS Series Satellite **Masahiro Nohmi** ***Shizuoka University***
1435-1455	**Afternoon tea** – Crown Promenade Foyer							
1500-1640 **(20min presentation inclusive of 5-minute Q&A)**	**Concurrent session 6**							
	AERO 1	**AERO 2**	**AERO 3**	**AERO 4**	**HUMS 1**	**ISSFD 1**	**ISSFD 2**	**ISSFD 3**
	STRUCTURES AND MATERIALS 6	**AIR OPERATIONS AIRCRAFT OPERATIONS (ON AND OFF BOARD) AND INTEGRATION**	**AVIONICS, ATM AND MISSIONS SYSTEMS 2**		**DIAGNOSTICS AND PROGNOSTICS 2**	**ORBIT DYNAMICS**	**MISSION ANALYSIS & DESIGN 2**	**FLIGHT DYNAMICS OPERATIONS 3**
	Chair:	**Chair:**	**Chair:**		**Chair:**	**Chair:**	**Chair:**	**Chair:**
	Promenade Room 1	**Promenade Room 2**	**Promenade Room 3**	**M1 & M2**	**M3 & M4**	**M6**	**M7 & M8**	**M9 & M10**

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	Probabilistic Risk Assessment Transition to Industry **Ross Stewart** ***QinetiQ***	Asset Management of an Ageing Aircraft: Opportunities Lost and Wins Achieved **Robert Crowe** ***Jacobs Australia***	Energy Management During Descent Operations: Human-Machine Teaming Considerations **Alessandro Gardi** ***RMIT University***		Validation of an Acoustic Travelling Wave System Through Forced Response Analysis of a Research Blisk **Mitchell Cosmo** ***Defence Science and Technology Group***	Propagator for asteroid trajectories tool (PAT2) with educational purposes **Sung Wook Paek** ***Samsung Sdi***	Utilizing the 'Chaotic' Tumbling of CubeSats **Graham Dorrington** ***RMIT University***	The Flight Dynamics Contribution to the Selection of MASCOT Landing Site on the Surface of the Asteroid Ryugu **Laurence Lorda** ***Centre National d'Etudes Spatiales***
	Real-time system identification for fixed wing Unmanned Aerial Vehicle **Arpan Das** ***RMIT University***	How Boeing is innovating using open source robotics software **Martin Szarki** ***Boeing Research & Technology***	Mission Design for Early Plant Disease Detection from UAS **Hai Pham** ***RMIT University***		Experimental Study of Worm Gearbox Faults using Acoustic Emission Signals **Chris Mechefske** ***Queens University Canada***	Exploring the motion in libration point regions of perturbed three body problems Application to orbits in the Mars-Phobos system **Alain Lamy** ***Centre National d'Etudes Spatiales***	Practical considerations and a realistic framework for a Space Traffic Management system **Tom Johnson** ***Analytical Graphic***	Flight Dynamics Analyses to reconstruct MASCOT's trajectory on Ryugu's surface **Laurence Lorda** **Centre National d'Etudes Spatiales**
	The strategy for a multi-provider/multi-user structural experimentation capability within Aerospace Division of DST Group **Ben Main** ***Defence Science and Technology Group***	Automatic Collision Avoidance Technology **Russell Turner** ***Lockheed Martin***	A Risk-oriented Systems Engineering Approach to address Cyber Security Issues of Civil Aircraft, Air Traffic Management, and Airports Systems **Lanka Bogoda** ***RMIT University***		Detection and location of defects in rolling element bearing using acoustic emission **Carl Howard** ***University of Adelaide***	Review of the Draper Semi-analytical Satellite Theory (DSST) **Juan Felix San Juan** ***University at Buffalo (SUNY)***	Reconsideration of the Thermal Contribution to New Horizons Acceleration **Craig Watkins** ***Informative Technology Innovations***	Flight Dynamics Analysis of extended Lifetime for the Metop-A GOME-2 Instrument **Antimo Damiano** ***RHEA Group***
	Thermoelastic assessment of impact damaged composites under cyclic loading **Cedric Antolis** ***RMIT University***	ATACSPO PC-9/A Systems PC-9 Aging Aircraft Challenges **Grant Lamb** ***Air Training and Aviation Commons Systems Program Office***			A Comparative Study of Online Impedance Measurement Techniques for a Lithium Polymer Battery **Amrit Sethi** ***University of Sydney***	Periodic corrections in secular Milankovitch theory applied to passive debris removal **Paolo Izzo** ***Technion-israel Institute Of Technology***		Metop-C deployment and start of 3-satellite operations **Pier Luigi Righetti** ***Eumetsat***
	Towards Accelerated Mode II Variable Amplitude Fatigue Testing for Composite Materials Rowan **Healey** ***Monash University***	VFR-into-IMC Accidents: An Analysis of Human and Weather-related Factors **Ayiei Ayiei** ***RMIT University***			Energy Harvesting Inside a Helicopter Main Gearbox to Power a HUMS Transducer **Riyazal Hussein** ***Defence Science and Technology Group***	A density based approach to the propagation of re-entry uncertainties **Mirko Trisolini** ***Politecnico Di Milano***		Avoidance of radiofrequency interferences with Metop-A and Metop-B during Metop-C early operations **Pier Luigi Righetti** ***Eumetsat***
1640-1700	**Congress Plenary Closing & Award Presentations**							

FINAL PROGRAM MATRIX

1830-2300	**HUM2019 Congress Dinner (HUMS Delegates only, limited seats)** **Time: 6:**30pm – 11:00pm **Location:** Vibe Hotel Savoy, Melbourne, 630 Little Collins Street, Melbourne VIC 3000 **Cost:** Included in your registration, please indicate your attendance at time of registration for catering purposes. **Includes:** Pre-drinks/canapés, Entrée, Main Course, Dessert with tea and coffee

WEDNESDAY 27 February 2019	
0900-01200	**3rd AIAC AVALON APPLICATION TECHNOLOGY SYMPOSIUM PRESENTATIONS** Avalon Airshow
0900-1130	**WORKSHOP: ADVANCING STRUCTURAL SIMULATION TO DRIVE INNOVATIVE SUSTAINMENT TECHNOLOGIES** **Location**: Engineers Australia – Discovery Hub Room Level 31 600 Bourke St, Melbourne VIC 3000
Thursday 27 February 2019	
0900-1200	**3rd AIAC AVALON APPLICATION TECHNOLOGY SYMPOSIUM PRESENTATIONS** Avalon Airshow
1400-1600	**1ST SINGLE AVIATION INDUSTRY WORKSHOP** Conference Room 2 Avalon Airshow