MONTREAL SPACE SYMPOSIUM

SPEAKER SCHEDULE

PROGRAMME

DAY 1
JOUR 1

The Maple Leaf Throughout the Solar System: An Overview of Canada's Planetary Exploration Program

PAST, PRESENT, & FUTURE OF CANADIAN SPACE
PASSÉ, PRÉSENT, ET FUTUR DE L'ESPACE AU CANADA

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

The Canadian Space Agency's (CSA) planetary exploration program involves participation in a variety of ongoing missions and a series of preparatory activities for those yet to come. CSA's planetary science goals follow two broad themes: (i) understanding the origin and evolution of the solar system, and (ii) habitability and life detection.
Two Canadian scientific instruments are currently in operation: the Alpha Particle X-Ray Spectrometer (APXS) aboard the Mars Science Laboratory's (MSL) Curiosity Rover, and the OSIRIS-REx Laser Altimeter (OLA), presently cruising towards asteroid Bennu. Additionally, Canadian scientists are contributing expertise via Participating Scientist / Co-Investigator roles on MSL, NASA's Mars InSight, and the ESA/Roscosmos ExoMars Trace Gas Orbiter (TGO).
Moving forward, agencies throughout the world are evaluating how to return samples from Mars, are considering a return to the Moon, and are developing mission concepts to explore the moons of the outer planets for possible signs of life. Canada continues to work with its international partners to identify possibilities to make important contributions to these efforts.

DAY/JOUR I
ROOM/SALLE A
10:00 - 10:30

TIMOTHY HALTIGIN

SENIOR MISSION SCIENTIST, PLANETARY EXPLORATION, CANADIAN SPACE AGENCY

Tim Haltigin holds PhD and MSc degrees from McGill University and a BSc from Concordia University. Tim joined the Canadian Space Agency in 2010, where he helps coordinate Canada's science contributions to exploration missions in the solar system. He is currently the Canadian mission manager and CSA Project Scientist for the OSIRIS-REx asteroid sample return mission.

Astrophotographic Adventures From Your Backyard

OTHERS
AUTRES

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

Learn how easy it is to capture spectacular images of the night sky from the comfort of your own backyard. This talk will cover the equipment needed, from beginner to advanced, as well as the post-processing techniques used in creating these images. The talk will also discuss some of the physics of light and how it relates to astrophotography.

DAY/JOUR 1
ROOM/SALLE B
10:00 - 10:30

Richard Hum

Richard Hum is a Applied Mathematics graduate from Queen's University, currently pursuing his M.Eng in Electrical Engineering at McGill University. He is an avid photographer with a passion for peering into the cosmos.

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SPACE RELATED ACTIVITIES AT NRC

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

PAST, PRESENT, & FUTURE OF CANADIAN SPACE
PASSÉ, PRÉSENT, ET FUTUR DE L'ESPACE AU CANADA

The National Research Council (NRC) plays a critical role in supporting the Canadian space industry by conducting research and technology development in the design, manufacture and qualification of space hardware. The NRC has many facilities related to space such as; the Falcon 20 aircraft to simulate micro- gravity, a large reverberant acoustic chamber to simulate launch, a large electrodynamic shaker for structural qualification testing and modal testing systems, an anechoic room for performing tests on antennas and RF payloads. NRC expertise has supported number of research projects such as laparoscopic surgery in space, space debris deorbiting technologies, evaluation of new space suits, supporting students in the Canadian Reduced Gravity Experiment Design Challenge, performing vibroacoustic qualification of RADARSAT, CASSIOPE and RCM satellites and providing support to CSA for spacecraft structural design. The NRC facilities are supported by the knowledge and expertise of its researchers to enable the Canadian space industry to enhance space related technologies.

DAY/JOUR I
ROOM/SALLE A
10:30 - 11:00

DR. VIRESH WICKRAMASINGHE

SENIOR RESEARCH OFFICER AND GROUP LEADER AT
NATIONAL RESEARCH COUNCIL CANADA

Dr. Viresh Wickramasinghe is the a Senior Research Officer and Group Leader of Aeroacoustics and Structural Dynamics Group at the Flight Research Laboratory of the National Research Council Canada. Prior to joining NRC in 2001, he worked as a Research Associate at the Active Materials and Structures Laboratory at MIT and helicopter maintenance engineer for the Sri Lankan Air Force. He obtained the PhD degree from Carleton University, Master of Science degree from Massachusetts Institute of Technology and Bachelor of Science degree from the United States Air Force Academy. His research interests include analysis and control of dynamic responses of structures to vibration, noise, blast and aerodynamics loads as well as response of human subjects to vibration and acoustic environments.

CHIME: The Canadian Hydrogen Intensity Mapping Experiment

SPACE SCIENCES
SCIENCES DE L'ESPACE

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

CHIME is a new radio telescope at the Dominion Radio Astrophysical Observatory (DRAO) near Penticton, British Columbia that will tackle several major questions in cosmology and astrophysics. The telescope will make a three dimensional map of the distant universe that will be used to probe the fundamental nature of dark energy -- the mysterious agent invoked to explain the acclerating expansion of the universe. It will also perform a survey for Fast Radio Bursts (FRBs) -- bright pulses of radio emission arriving in random directions from unknown sources well beyond our galaxy. Finally, it will precisely measure the arrival time of radio pulses from known pulsars in an effort to detect ripples in the fabric of space and time due to gravitational waves. CHIME was made possible by using market-driven commercial technologies in innovative ways. In this talk, I will give an overview of the instrument and describe exactly how it will address these exciting science topics.

DAY/JOUR I
ROOM/SALLE B
10:30 - 11:00

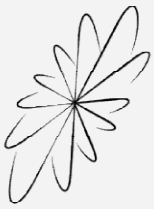
Seth Siegel

Postdoctoral Fellow at McGill University

Seth Siegel is a postdoctoral fellow at McGill University. He earned a Bachelors of Science in physics and mathematics from the University of Michigan, and a PhD in physics from the California Institute of Technology. His research involves developing novel astronomical instrumentation and using it to probe the large scale properties of the universe.

Capability Demonstration - CSA Program for Increasing Space Readiness of Space Science and Technology While Training the Next Generation - Focus on Sub-Orbital Activities

past, present, & future of Canadian space
passé, présent, et futur de l'espace au canada



MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

DAY/JOUR 1
ROOM/SALLE A
11:00 - 11:30

Canada has a strong national strategic interest in space. Space will be used as a way to drive a broader economic growth and leveraged for the benefits of Canadians. Canada's future in space relies on innovation, advancement of science and technology, and future generation of highly educated and skilled space scientists and engineers. A strong Canadian space capability demonstration program is needed for maintaining Canada's leading edge in space and developing new capabilities for the future. The Canadian Space Agency (CSA), in response to the needs expressed by Canadian space industry, academia, and the government, and to better prepare Canada to capture future mission and commercial opportunities, is in the process of developing a capability demonstration program, which includes both pre-space demonstration and space demonstration. Demonstration in space on board a satellite or a space platform (e.g. ISS) is the most desirable method to demonstrate new technology, scientific approach or capability. However, there are only a limited number of opportunities for space demonstration flights and the associated cost is usually high. Suborbital platforms, such as balloons and rockets, remain popular for the academia and industry engaging in space science and engineering to test their hardware and approaches as they provide near-space environments with low cost and easy access. Suborbital platforms are also often used to conduct science in Canada's priority areas such as study of climate changes and validation of satellite data (ex. atmospheric data).
This paper discusses the needs for a capability demonstration program and its overall objectives, and provides greater details on demonstration activities using suborbital platforms, including on-going stratospheric balloon flights, parabolic flights, and possible rocket flights in the future for Canada.

Steeve Montminy

Senior Systems Engineer at Canadian Space Agency

Steeve Montminy received a Master degree in Mechanical engineering from l'École de Technologie Supérieure, Montréal, Quebec, Canada. He has been with the Canadian Space Agency for 15 years. Steeve's current position is Manager, Suborbital Demonstration and Project Manager on the STRATOS program at CSA.

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Human Society in Space: Utopias and Outer Space Posthumanism

MONTREAL SPACE SYMPOSIUM
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SPACE LAW & SPACE SOCIAL SCIENCES
DROIT & SCIENCES SOCIALES SPATIALS

This short presentation explores the social and political aspects of the migration of humans into space (also referred to as space colonization). Specifically, it focuses on some of the challenges of political organization, economy, and ethics beyond planet Earth. How will extraterrestrial environments affect the ethics and guiding principles of current societies? Does the prospect of permanent migration into space herald a transition to a post-human world?

In this presentation I point out some ethical and political challenges of migration (or colonization) that stem not just from the radical differences between our home planet and space environments, but also from our inability to anticipate the effects of fundamental aspects of space migration. For example: how would the scarcity of air and water affect political organization? How might different political arrangements (capitalistic, communitarian, autocratic) arise from organizational and economic premises in the early stages of space exploration?

Long duration space mission experiments, as well as literary imagination (from SF author such as Robert Heinlein, Philip K. Dick, among other author), provide some of the food for thought used in this presentation. It aims to contribute to the ongoing discussion about the ethics of space exploration and the challenges of developing a new way of being for humans outside our home planet.

DAY/JOUR I
ROOM /SALLE B
11:00 - 11:30

Artur de Matos Alves

LECTURER AT CONCORDIA UNIVERSITY

Artur Matos Alves holds a PhD in Communication Studies from the New University of Lisbon, with a dissertation on the social and political impacts of emerging technologies. He currently lectures in Concordia University. His research focuses on philosophy of technology and the societal dimensions of emerging technologies, new media, and cyber conflict.

PLANETARY ROVERS: DRIVING WHERE G ISN'T 10 M/S^2

SPACE ENGINEERING
GENIE DE L'ESPACE

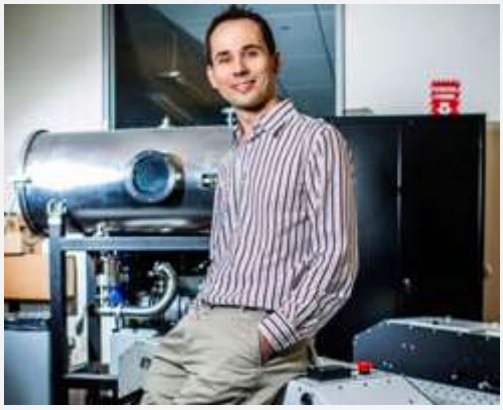
MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

Rovers have dramatically increased our ability to explore Mars, and there is a growing body of work in rover field testing done in analogue environments here on Earth to aid rover designers, planners, and operators. A key Martian attribute that cannot be replicated in field trials on Earth, though, is the effect of reduced gravity on the soil itself. Soil in reduced gravity has reduced strength which poses a mobility challenge. This lecture outlines some of the physical effects of reduced gravity on soils, and describes our research lab's upcoming experimentation campaign to test rover wheel-soil interactions in reduced-gravity flights aboard the National Research Council's Falcon 20 aircraft.

DAY/JOUR 1
ROOM/SALLE A
11:30 - 12:30

KRZYSZTOF SKONIECZNY

ASSISTANT PROFESSOR AT CONCORDIA UNIVERSITY



Chris is an assistant professor at Concordia University, in the Electrical and Computer Engineering Department, and a Tier 2 Canada Research Chair in Aerospace Robotics. He completed his Bachelor's and Master's degrees at the University of Toronto in Aerospace Engineering and his PhD in Robotics at Carnegie Mellon University, with a thesis on low- gravity robotic excavation and mobility. He had completed an internship and Master's research fellowship at MDA working on the ISS manipulator arm and on ExoMars wheel-walking simulations, respectively.

LA RECHERCHE D'EXOPLANÈTES DANS NOTRE VOISINAGE AVEC SPIROU ET NIRPS

SPACE SCIENCES
SCIENCES DE L'ESPACE

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

Malgré les avancées spectaculaires dans l'étude des exoplanètes, nous n'avons toujours pas réussi à prendre une image d'une planète comparable à la Terre autour d'une autre étoile que le Soleil. Ce défi reste hors de portée de la technologie actuelle, mais on prévoit que les grands observatoires qui seront déployés sur l'horizon 2025-2035 (E-ELT, TMT, LUVOIR) seront en mesure de relever ce défi. L'équipe de l'institut de recherche sur les exoplanètes mène deux projets d'instruments, SPIRou et NIRPS, qui seront installés en 2018-2019 à deux grands observatoires au sol (TCFH et ESO la Silla), et permettront de détecter indirectement ces planètes afin de déterminer lesquelles pourront être imagées dans une dizaine d'années.

DAY/JOUR I
ROOM/SALLE B
11:30 - 12:30

ÉTIENNE ARTIGAU

CHERCHEUR Á UNIVERSITÉ DE MONTRÉAL

Après une thèse en instrumentation astronomique à l'UdeM, j'ai travaillé pendant 3 ans à l'Observatoire Gemini sud, situé au Chili. Je suis revenu à l'UdeM e 2009 et je suis maintenant chercheur au sein de l'institut de recherche sur les exoplanètes de l'Université de Montréal. Mes intérets scientifiques portent sur les naines brunes et les exoplanètes. Je suis responsable scientifique de deux instruments, SPIRou et NIRPS, qui permettront de découvrir des planètes autour des planètes autour des naines rouges du voisinage solaire.

ABB's Perspective on Space Optics in Canada

SPACE ENGINEERING
GENIE DE L'ESPACE

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

We will present a somewhat biased overview of past, current and possible future space optics projects in Canada. We will also present some of ABB's capabilities and domestic and foreign projects in that domain.

DAY/JOUR 1
ROOM/SALLE A
12:30 - 13:00

Louis Moreau

CHIEF SCIENTIST AT ABB INC.

M.Sc. in atmospheric science (McGill 1993). System engineer at ABB since 1998.

The JAC Solar Eclipse - An Astronomical First Day of Classes

OTHERS
AUTRES

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

The SandBOX is a student-centric innovation and social entrepreneurship hub at John Abbott College whose mission is to engage students from all disciplines in a problem-solving process for real world issues. Its first project to attain completion was the August 21st Solar Eclipse Viewing, started by a team of students whose combined passions include astronomy, STEM education, and the betterment of their community. This event was hosted in participation with the Royal Astronomical Society of Canada in the hopes of bringing together people from all walks of life and introducing them to space science in an accessible, memorable way, and ended up attracting over 2000 people from the college and surrounding areas! Here, one of these students, Emilie Lafleche, will be speaking about her experience with the SandBOX planning and hosting this unforgettable event, as well as what drives her to continue her studies in space sciences.

DAY/JOUR 1
ROOM/SALLE B
12:30 - 13:00

Emilie Lafleche

STUDENT AT JOHN ABBOTT COLLEGE

Emilie Lafleche grew up in Montreal, QC and recently moved to the West Island. After being selected to attend an environmental science research trip to Cornwall, ON in grade 10, she found a mentor who introduced her to the world of astrobiology. Since then, she has enrolled in the Science program at John Abbott College and continues to share her passion for space sciences and community involvement with the world.

CSA PRESIDENT KEYNOTE PRESENTATION

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

PAST, PRESENT, & FUTURE OF CANADIAN SPACE
PASSÉ, PRÉSENT, ET FUTUR DE L'ESPACE AU CANADA

DAY/JOUR 1
ROOM/SALLE A & B
14:00 - 15:30

(SPACE) ENGINEERING AS A CAREER?

SPACE ENGINEERING
GENIE DE L'ESPACE

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

This presentation will briefly cover some key topics on 'Engineering as a Career' with special focus on Space engineering, covering activities such as satellite design, manufacturing, assembly and integration, testing, launch and operations. Several Canadian satellite projects will be used as examples throughout the presentation to underline the typical work an engineer performs on different subsystem such as structures, thermal, power, attitude control, propulsion, command and data handling, comms, etc. The satellite projects presented will be those that the presenter has worked on in recent years, and are NEOSSat (Near-Earth Object Surveillance Satellite), M3MSat (Maritime Monitoring and Messaging Microsatellite), and RCM (RADARSAT Constellation Mission).

DAY/JOUR 1
ROOM/SALLE A
15:30 - 16:30

SIAMAK TAFAZOLI

SENIOR PROJECT MANAGER AT
CANADIAN SPACE AGENCY

Siamak Tafazoli is a senior project manager in the Space Utilization branch of the Canadian Space Agency. He holds a bachelor's and a master's degree in aerospace engineering from Carleton University in Ottawa and McGill University in Montreal, respectively, and obtained his Ph.D. in electrical engineering from Concordia University in Montreal. Siamak also obtained a graduate degree in Air and Space Law from McGill's Institute for Air and Space Law. He has about 25 years of experience in the aerospace industry having had his own consulting company, working in industry at CAE Electronics and Canadair, in academia for McGill and Concordia universities as adjunct professor and in government at the National Research Council of Canada and since 2000 at the Canadian Space Agency. He has been involved in technical and project management of Canadian satellites missions such as NEOSSat, M3MSat and RCM.

Dr. Tafazoli is the Canadian representative at the Consultative Committee for Space Data Systems (CCSDS) Management Council. He has more than 60 technical publications.

The Needed Development in Materials for Future Space Programs

PAST, PRESENT, & FUTURE OF CANADIAN SPACE
PASSÉ, PRÉSENT, ET FUTUR DE L'ESPACE AU CANADA

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

As space agencies move towards exploring planets, new materials and new ways to use materials are needed in order to meet the requirements of these future space missions. This presentation covers the current use of composite materials in space programs, the current development being done at the Canadian Space Agency in collaboration with academia, and the future developments being required.

DAY/JOUR 1
ROOM/SALLE B
15:30 - 16:00

Marie-Josée Potvin

Engineer Development Program Manager at Canadian Space Agency

Dr. Potvin is the Manager of the Engineer Development Program of the Canadian Space Agency. Through this program, 4 young engineers are hired every year and turned into seasoned space engineers through a thorough 2 year training program. Dr. Potvin manages also several projects aimed at positioning both Canadian industries and academia in the space technology field, namely for composite materials.

Control of Flexible Spacecraft

Space Engineering
Genie de l'espace

Montreal Space Symposium
October 2017

Instrument pointing control systems mounted on spacecraft are inherently bandwidth-limited due to lightly-damped flexible modes of the spacecraft. This talk is concerned with the recovery of control bandwidth for space-based pointing systems via the application of mu-tip control. This talk will first review the equations of motion of a flexible spacecraft. Next, using a "massive payload assumption" a passive input-output map is established between a modified output, called the mu-tip rate, and a modified control input. This introduction of the mu-tip rate and modified control input enables the use of passivity-based control, which in turn realized robust closed-loop control to mass and stiffness uncertainty. Bandwidth recovery is confirmed by investigating the frequency response of the linearized system.

Day/Jour 1
Room/Salle B
16:00 - 16:30

James Richard Forbes

Assistant Professor at McGill University

James Richard Forbes is an Assistant Professor in the Dept. of Mechanical Engineering at McGill University. James is also a member of the Centre for Intelligent Machines. His research focuses on estimation and control of robotic and aerospace systems. James is a member of the AIAA and IEEE.

The Engineer Development Program of the Canadian Space Agency

space engineering
genie de l'espace

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

The Canadian Space Agency has an an Engineer Development Program hiring young engineers and young Ph. D.s and training them for two years to turn them into seasoned space engineers. Following the training program, these engineers are assigned to various sectors of the Canadian Space Agency. This presentation will introduce the corporate structure of the Canadian Space Agency, the recruitment process of the Engineer Development Program, and how to prepare oneself to compete in those recruitment processes.

DAY/JOUR 1
ROOM/SALLE A
16:30 - 17:00

Marie-Josée Potvin

Engineer Development Program Manager at Canadian Space Agency

Dr. Potvin is the Manager of the Engineer Development Program of the Canadian Space Agency. Through this program, 4 young engineers are hired every year and turned into seasoned space engineers through a thorough 2 year training program. Dr. Potvin manages also several projects aimed at positioning both Canadian industries and academia in the space technology field, namely for composite materials.

SUSTAINABILITY OF OUTER SPACE: AN UNCERTAIN OUTLOOK

SPACE LAW & SPACE SOCIAL SCIENCES
DROIT & SCIENCES SOCIALES SPATIALS

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

As we mark six decades of space operations, the number of objects in Earth orbit continues to rise, reaching well over 20,000 tracked objects. A much larger number of objects, estimated to be several hundred thousand, too small to be tracked, also clutter the space environment. The objects are an accumulation of active and inactive satellites, rocket bodies and debris associated with launches, satellite failures and ASAT testing. Increased commercialization of space is resulting in ever-greater numbers of satellites orbited every year. The recent plans for mega-constellations of several thousand satellites are an alarming development. Technology is enabling greater utilization of space, but there is no international regulatory mechanism to mange the environment. The UNCOPUOS space debris mitigation guidelines are non-binding leading to insufficient compliance. Unless trends change, some of the more useful orbital regimes risk becoming unsustainable due increasing congestion and debris.

DAY/JOUR I
ROOM/SALLE B
16:30 - 17:00

GILLES P DOUCET

PRESIDENT AT SPECTRUM SPACE SECURITY INC.

Gilles Doucet is an independent space security consultant and founder of Spectrum Space Security Inc., with expertise in satellite technologies, military space applications, space regulatory frameworks and international space security cooperation. Consulting services include research, advice and education on multiple aspects of space security: technology, policy and the impact of international and national regulatory regimes on commercial and government activities in the space national security sector.

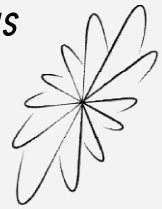
Mr Doucet recently established his consulting company following a 35 year career as a research scientist with the Canadian Department of National Defence (DND) during which he held numerous positions researching and assessing space capabilities relevant to military and national security applications. Mr Doucet's current consulting practice specializes on the challenges emerging from the rapid technology- enabled growth in new space applications within the context of a lagging international security environment.

In other professional activities, Doucet is a technical consultant for ABH Aerospace, a U.S.-based firm which provides advice and counsel on all aspects of aviation, space and cybersecurity law, and serves as a technical expert for the MILAMOS international space law project (Manual on International Law Applicable to Military Use of Outer Space).

Mr Doucet holds Bachelor & Masters degrees in Mechanical Engineering (Ottawa, 1981 & 1993) and a Graduate Certificate of Air and Space Law (McGill -2017).

An Introduction to Satellite Operations and Engineering Support at the Canadian Space Agency (CSA) / Une introduction aux opérations satellitaires et support d'ingénierie à l'Agence spatiale canadienne (ASC)

Space Engineering
Genie de l'espace



MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

This presentation will provide information about current satellites being operated at CSA/St-Hubert, the ground facilities involved, how operations are done, and an overview of engineering support activities.

Cette présentation fournira des informations sur les satellites actuellement opérés à l'ASC/St-Hubert, les installations terrestres en jeux, le déroulement des opérations, ainsi qu'un survol des activités de support d'ingénierie.

DAY/JOUR 1
ROOM/SALLE A
17:00 - 18:00

Christian Carrié

Engineer, Spacecraft Operations at Canadian Space Agency

Graduated from Polytechnique (B. Eng) and from McGill (M. Eng) in electrical engineering. Since 1994, M. Carrié worked in the space industry in satellite development and operations. Main space program contributions include: Radarsat (1,2 et RCM), SCISAT-1, HTV, Cassiope, NEOSSat, M3MSat Currently, senior engineer in the Satellite Operations group at the Canadian Space Agency (CSA), he is responsible for on-going flight operations and supporting the development of future missions.

Jean-Francois Cusson

Engineer at Canadian Space Agency

Computer engineer by training and graduated from École Polytechnique de Montréal (B. Eng). Mr. Cusson specializes in software and digital electronics. He started his career in digital telecommunications and aircraft part inspections by laser ultrasonics. He then joined CAE where he worked on the development of the Canadarm2 Operations and Training Simulator. He then joined the Canadian Space Agency where he has been working on the stratospheric balloon program (Stratos), the

Sensible International Regulations - How to Make Sure the Laws of Man Are Not More Insurmountable Than the Laws of Gravity

Space Law & Space Social Sciences
Droit & Sciences Sociales Spatials

Montreal Space Symposium
October 2017

How do we prepare the wonderful world of international aviation regulation for the boring world of sub-orbital, hyper-sonic, high-altitude vehicles? The presentation will provide some perspectives of how we should have 21st century framework for 21st century operations using 21st century technology.

DAY/JOUR I
ROOM/SALLE B
17:00 - 17:30

Yuri Fattah

Programme Manager at ICAO

Aeronautical Engineer working in ICAO since 1998, involved in Multidisciplinary Priorities - Commercial Space, Artificial Intelligence for example

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A New Vision: The Future of the ISS

Past, Present, & Future of Canadian Space
Passé, Présent, et Futur de l'Espace au

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

The ISS Program, an enormous achievement in terms of international collaboration and engineering, is set to end in 2024. However, it still has the potential to keep working through 2028 and beyond. The international partners must decide if they want to continue the program or establish a new vision. This discussion is meant to inspire the next generations, develop innovative technologies, and enable ground-breaking research for humankind. To achieve these goals, we assumed a future where current economic and technological trends keep unfolding. With this assumption in mind, we proposed to split the ISS into two independent space stations, and repurpose them respectively into an International Research Facility and an International Spaceport. The prior will take over the research activities of the ISS, and create new research opportunities thanks to additional modules. The latter will provide docking ports and manufacturing facilities to assemble, service, repair, and refuel spacecraft for missions to the Moon, Mars, and beyond. The technological aspects of this endeavour, the political requirements, and the financial viability were examined. While our research was specifically focused in finding an alternative to decommissioning the ISS, the question of whether de-orbiting is the best solution to the end of the stations life still remains. We believe that that keeping a permanent human presence in orbit is of paramount importance and the end of the ISS would likely represent a major setback to human space exploration and international collaboration. We hope this topic will inspire decision makers to move towards a better future for the ISS.

DAY/JOUR I
ROOM/SALLE B
17:30 - 18:00

Lisa Drudi

Manufacturing Lead/Deputy Project Manager at Space Concordia/ISU

Lisa Drudi has a Bachelor's of Science degree in Atmospheric and Oceanic Science from McGill University and is a graduate from Concordia University in Mechanical Engineering specializing in Manufacturing and Design Engineering. Lisa is also a recent graduate from the International Space University Summer Space Program in Cork, Ireland. Lisa completed internships both at Pratt & Whitney Canada and Lockheed Martin Canada throughout her engineering studies, which has given her an extensive background in the aerospace industry. For the past three years, she has been a member of the student society Space Concordia where she participated in both Spacecraft and High Altitude Balloon divisions as manufacturing lead.

Tool Integration to Facilitate and Accelerate Spacecraft Design

SPACE ENGINEERING
GENIE DE L'ESPACE

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

The design of any complex system requires the use of a multitude of specialized tools in parallel while having to maintain an overall conflict-free and consistent design. This is a difficult requirement that can be very time consuming. One solution is to integrate the various tools such that there is only one master source for each piece of information. We demonstrate this approach for the particular problem of spacecraft design where the following tools are integrated: Satellite ToolKit from AGI (for orbital mechanics, etc). , NX (for Mechanical design) and Modelica as the main workhorse for all the dynamics.

DAY/JOUR 1
ROOM/SALLE A
18:00 - 18:30

Chahé Adourian

SOFTWARE AND SIMULATION ARCHITECT AT CANADIAN SPACE AGENCY

Chahé Adourian is a Software and Simulation Architect in the Engineering Development group in the Space Technologies Directorate at the Canadian Space Agency. He obtained his degree in Joint Honours Mathematics and Physics from McGill University in 1998, holds a Diploma in Computer Science and has completed a Master's degree in Computer Science in the area of collaborative design at McGill; He has been working at the Canadian Space Agency for almost 20 years mainly conducting simulator development and verification work in various programs. His current research interests are satellite simulation, collaborative environments for design and simulation based design.

The Rise of Competitive Student Rocket Engineering in Canada

SPACE ENGINEERING
GENIE DE L'ESPACE

MONTREAL SPACE SYMPOSIUM
OCTOBER 2017

In the past few years, Canadian rocketry teams have been gaining prominence on the world stage. They have achieved this not only by winning numerous awards, but also by their high degree of technical skill and engineering ambition on display in their work. The lecture will go into the speaker's own experience on one of these teams, it will cover the overall impact that these teams have had and it will go into the future of student and amateur rocketry in Canada.

DAY/JOUR 1
ROOM/SALLE B
18:00 - 18:30

Neil Woodcock

I am a mechanical engineering graduate from Concordia University. I have previously had experience as the Space Concordia Rocketry Division Chief Rocket Designer and as Space Concordia's President. I am currently working in the Aerodynamics department at CAE Inc.