



PROGRAMME

2023 CCToMM Symposium on Mechanisms, Machines, and Mechatronics

**Quebec City, Quebec, Canada
June 19-20, 2023**

The 2023 CCToMM M³ Symposium will take place at this address:

[Gene-H.-Kruger Building](#)

2425 rue de la Terrasse, room GHK-2320

Quebec City (QC) G1V 0A6

Canada

Programme at a Glance

Monday, June 19, 2023

8:30 – 9:00	Welcome and registration
9:00 – 10:00	Keynote
10:20 – 11:40	Session I: Kinematics and Dynamics
14:00 – 15:00	Session II: Machines and their Components
15:20 – 16:20	Session III: Manipulation and Prosthetics
16:40 – 17:40	Lab visit
19:00 – 21:00	Banquet dinner

Tuesday, June 20, 2023

9:00 – 10:20	Session IV: Cable-Driven Parallel Robots
10:40 – 11:40	Session V: Vehicles
14:00 – 17:00	CCToMM Annual General Meeting

Monday, June 19, 2023

Welcome and Registration

8:30 – 9:00

Keynote Lecture

9:00 – 10:00

“3D Printing With Ice...Six-DOF Cable-Suspended Parallel Mechanisms”

Eric Barnett, Robotiq Inc.

Session I: Kinematics and Dynamics

10:00 – 11:40

Chair: Lionel Birglen, Polytechnique Montréal

P04 - “Dimensional Kinematic Synthesis of Angular Velocity Function Generators”

M. John D. Hayes and Mirja Rotzoll

P05 - “Oscillatory Motion of a String Supported Rigid Body”

Bruce Minaker

P11 - “Trajectory Generation of a Cable-Driven Parallel Robot for Aerial Videography and Dynamic Workspace Optimization”

Nathan Raab, Andrew Lamperski and Ryan Caverly

P14 - “A De Casteljau Algorithm for Generating Object Shape Dependent Freeform Planar Motions”

Qiaode Jeffrey Ge and Huan Liu

Lunch

12:00 - 13:40

[Saveurs Campus](#)

Desjardins Building

2325 rue de l'Université

Session II: Machines and their Components

14:00 - 15:00

Chair: Marc Arsenault, Laurentian University

P02 - “On the Synthesis and Design of a Novel Backdrivable High-Stiffness Capstan Drive”

Jordan Longval and Clément Gosselin

P13 - “Spherical Exoskeleton for the Measurement of Shoulder Movement”

Jiaji Li, John Golden, J. Michael McCarthy, Bailey Johnson, Vance Gardner, Edward Quilligan and Carlos A. Prietto

P17 - "Experimental Verification of Dynamics of a Novel Magnetic Shock Absorber"
Amirhossein Daliri Shadad, Fred Afagh, Fidel Khouli and Robert Langlois

Session III: Manipulation and Prosthetics

15:20 - 16:20

Chair: John Hayes, Carleton University

P01 - "In-Hand Manipulation Using Extrinsic Dexterity and Simple Assistive Tools"
Pierre-Olivier Bolduc and Clément Gosselin

P06 - "Manipulation for Mobile Robots to Autonomously use Elevators and Open Doors"
Christopher Baird and Scott Nokleby

P12 - "Toward Development and Prototyping of a Biologically Inspired Knee Prosthesis"
Jacob Lufkin, Chris McGibbon and Juan Antonio Carretero

Lab Visit

16:40 - 17:40

[Laboratoire de robotique](#)

Adrien-Pouliot Building
1065 avenue de la Médecine, room PLT-3524
Clément Gosselin and Philippe Cardou

Banquet Dinner

19:00 - 22:00

[L'Atelier](#)

624 Grande Allée Est

Tuesday, June 20, 2023

Session IV: Cable-Driven Parallel Robots

9:00 - 10:20

Chair: Ryan Caverly, University of Minnesota

P07 - "Design of a Suspended Cable-Driven Parallel Robot for the Semi-Automation of Construction Tasks"
Ethan McDonald, Marc Arsenault and Steven Beites

P09 - "Design, Control, and Experiments of a Low-Cost Open-Source Planar Cable-Driven Parallel Robot"
Mikael Arslan and Lionel Birglen

P10 - "Actuators and Sensors of a 4-UPS Hybrid Cable-Driven Parallel Manipulator"
Paul Sanford and Juan Antonio Carretero

P15 - "A 5-DoF Cable Driven Parallel Robot for the Calibration of Radiotherapy Machines"
Ramin Mersi, Louis Archambault, François Therriault-Proulx and Philippe Cardou

Session V: Vehicles

10:40 - 11:40

Chair: Pierre Larochelle, South Dakota School of Mines and Technology

P03 - "Electrified Accessories Study for 48V Hybrids"

Norman Bucknor and Madhusudan Raghavan

P08 - "ArUco-Based Global Map Initialization for Multi-Robot Exploration"

Noor Khabbaz and Scott Nokleby

P16 - "Dynamic Modelling and Experimental Validation of a Multi-Body UAV"

Ahmed Taimah, Osama Obeid and Eric Lanteigne

Lunch

12:00 - 13:40

[Saveurs Campus](#)

Desjardins Building

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CCToMM Annual General Meeting

14:00 - 17:00