

Chair: D.S. Weaver

D-1	FM-1
D-2	FM-2
D-3	FM-3

Chair: M. Ostoja-Starzewski

D-4	FM-4	T-1
SS-1	FM-5	T-2
SS-2	FM-6	T-3

Chair: M.P. Païdoussis

SS-3	FM-7	T-4
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Chair: A.K. Misra

SS-4	MD-1
SS-5	MD-2
SS-6	MD-3

MD - Manufacturing & Design

MS - Mechanical Systems

MTMM - Modern Topics in Mechanics of Materials

SM - Solid Mechanics

SS - Solids & Structures

TEP- Thermo-Electric Phenomena

T - Turbulence

US - Uncertain Systems

AE - AEROELASTICITY

→ SESSION 1 (MAY 30, 16:00-17:40), McC204

CHAIR: F. NITZSCHE

16:00

Review of Grid Deformation Methods for Aeroelasticity Simulations

C. Liauzun

16:20

Low Frequency Aeroelastic Oscillations at Low Re Numbers

D. Poirel, Y. Harris

16:40

An Experimental Investigation of the Limit Cycle Oscillations of a Structurally Nonlinear, Two-dimensional Airfoil in Subsonic Flow

C. Marsden, S.J.Price

17:00

Transient Growth of Energy in an Experiment of Airfoil Flutter

P. Hémon, E. de Langre, P. Schmid

→ SESSION 2 (MAY 31, 16:00-17:40), McC204

CHAIR: E. DE LANGRE

16:00

Approximation of Unsteady Aerodynamic Forces by Use of Combination of Fuzzy Clustering and Shape Preserving Techniques

A. Hiliuta, R.M. Botez, M. Brenner

16:20

Corrected Least Squares Method for AeroServoElasticity Studies

D.E. Biskri, R.M. Botez, N. Stathopoulos, S. Thérien, A. Rathe, M. Dickinson

16:40

A Fast Aeroelasticity Computational Technique for Aircraft Wing Structure Optimization

S.-M. Roth, A. Soulaïmani

17:00

Control of Vibration and Noise in Helicopter Blades Using the Smart Spring Device

G. Oxley, F. Nitzsche, V. Wickramasinghe

BRM - BIO-RHEOLOGICAL MODELING

→ SESSION 1 (JUNE 1, 10:30-12:10), McC12

CHAIR: R. MONGRAIN

10:30

Towards Patient-Specific CFD Modelling of Endovascular Aneurysm Therapy

D.A. Steinman

10:50

Modeling of Blood in Fluid-Structure Interaction Simulations

A. Ranga, R. Mongrain, R.L. Leask, O. Bouchot, R. Cartier

11:10

Some Aspects of the Rheology of Blood

M. Scott, G. Tenti, and W.-K. Liu

11:30

Development of Non-Newtonian Blood Analogs for Flow Visualization and Hemolysis Investigation

R. Mongrain, P. Rousselin, T. Nguyen, J.C. Tardif

→ SESSION 2 (June 2, 10:30-12:10), McC12

CHAIR: A. SHIRAZI-ADL

10:30

Thermo-Bioconvection of Gravitactic Microorganisms in a Fluid-Saturated Porous Medium

T. Nguyen-Quang, T. H. Nguyen, G. LePelec and P. Bournot

10:50

Microcracks Factor and Free Surface Density in the Bone Remodeling Equations

G.R. Rouhi, W. Herzog, L.J. Sudak, M. Epstein

11:10

Modeling Bone Resorption Using Mixture Theory: Mechanical and Biological Factors

G.R. Rouhi, W. Herzog, L.J. Sudak, M. Epstein

11:30

Nonlinear Composite Modeling of Articular Cartilage with Collagen Fibrils as Membrane Elements

R. Shirazi, A. Shirazi-Adl

11:50

Aspects of Micromechanics of a Lamella in Bone

I. Jasiuk, M. Ostoja-Starzewski

→ SESSION 3 (JUNE 2, 15:00-16:40), McC12

CHAIR: G. BAROUD

15:00

Biomechanical FE Analysis Subsequent to Vertebroplasty

G. Baroud

15:250

Biomechanisms Underlying Cement Injection Process in Vertebroplasty

G. Baroud

15:40

Stresses in Stented Hyperelastic Artery Models

J.Bedoya, C.Meyer, M.R. Moreno, J.E. Moore, Jr.

16:00

Sensitivity of Trunk Model Predictions to Changes in Load Position in Upright Postures - Effects on Muscle Forces, Internal Loads and Stability

M. El-Rich, A. Shirazi-Adl

→ SESSION 4 (JUNE 2, 17:00-18:40), McC12

CHAIR: R.L. LEASK

17:00

Effect of Formalin Fixation on the Local Mechanical Properties of Aortic Tissue

L. Rouleau, S. Delorme, F. Thibault, R. Mongrain, R.L. Leask

17:20

Issues in Modelling the Mechanics of the Middle Ear

W.R.J. Funnell, S.J. Daniel

17:40

A Kinematic Model to Predict Ankle Ligament Elongation During Snowboarding

S. Delorme, M. Lamontagne, S. Tavoularis

18:00

Explicit Analytical Models for the Aortic Transvalvular Pressure Gradients

D. Garcia, L. Kadem, D. Savéry, P. Pibarot, L.-G. Durand

18:20
Effects of Quadriceps and Restraining Forces on Knee Joint Mechanics in Flexion
W. Mesfar, A. Shirazi-Adl

DNM - DISCRETE AND NANO-MECHANICS

→ SESSION 1 (MAY 31, 14:00-15:40), McC12
CHAIR: O. VINOGRADOV

14:00
Multi-Scale Modeling of the Indentation of Nickel-Aluminum Nano-layers
I. Shabib, K. Chen, R.E. Miller, L.R. Zhao

14:20
Testing a Criterion for Dislocation Nucleation using Molecular Dynamics Simulations of Nano-Indentation
Y.J. Zhao, R.E. Miller

14:40
Monte Carlo Lattice Based Simulation of Polymer Nanocomposites
M. Ghiass, A.D. Rey

15:00
Are Polymer-Matrix Nanocomposites Useful Structural Materials for Microsystem Applications?
B. Ashrafi, P. Hubert, S. Vengallatore

15:20
Gorsky Damping in Nanomechanical Structures
S. Vengallatore

→ SESSION 2 (MAY 31, 16:00-17:40), McC12
CHAIR: S. VENGALLATORE

16:00
Spring-Particle Model for Hyperelastic Cloth
M. García, O. Ruiz, M. Gomez, P. Boulanger

16:20
Modelling Convective and Diffusive Transfer on Networks of Discrete Values
P.O. Dallaire, G. Payre

16:40
A Static Analogue of Molecular Dynamics Method for Crystals
O. Vinogradov

17:00
Atomistic Simulation of Hydrogen-Assisted Cracking in bcc Iron
I.Y. Telitchev, O. Vinogradov

17:20
Particle Modeling of Dynamic Fragmentation
G. Wang, M. Ostojca-Starzewski

D - DYNAMICS

→ SESSION 1 (MAY 30, 11:00-12:40), McC13
CHAIR: M. NAHON

11:00
Free Vibration Analysis of a Crankshaft using FEA
P. Marchand, D. Redekop

11:20
Vibration Analysis of a Toroidal Shell Using MAPLE
W. Jiang, X.J. Hu, D. Redekop

11:40
Linux, Open-Source Software, and Multibody Dynamics
B. Minaker

12:00
A Forward Dynamics Algorithm for State- and Phase-Space Based Simulations of Multi-body Systems
J. Kovacs

12:20
A Difficult Problem in Nonholonomic Dynamics
L. Liang, L. Dai, Q. Guo

→ SESSION 2 (MAY 30, 14:00-15:40), McC13
CHAIR: J. BECKER

14:00
Study of Active Anti-roll Bar Controller for off Road Vehicle
S. Gosselin-Brisson

14:20
Stability and Active Roll Control of Heavy Road-Vehicles
Y.Tian S. F. Asokanthan

14:40
Ride Performance of Heavy Vehicle Using 3D Finite Element Model
M.A. Chowdhury, W. Ahmed, R. Sedaghati

15:00
Model Predictive Control and Dynamic Inversion for Unmanned Aerial Vehicles Navigation Control
Z. Cheng, D. Neculescu, B. Kim

15:20
Evaluation of the ROPOS Liveboating Configuration Using Dynamics Simulation
B. Buckham, D. Steinke, S. Prabhakar

→ SESSION 3 (MAY 30, 16:00-17:40), McC13
CHAIR: J. KOVACS

16:00
Rigid Body Impact Modeling Using Integral Formulation
Y. Zhang, I. Sharf

16:20
A Contact Dynamics Model for Space Robotic Systems
L. Luo, M. Nahon

16:40
Lagrangian Point Multi-Tether Systems
B. Wong, A. Misra

17:00
Dynamic Response of a Diffuser Pipe Subject to a Harmonic Follower Force
E. Texier and H. Alighanbari

17:20
Natural Frequencies of Completely Free Stepped Plates
A. Shafiee, Y. Dong, D. Redekop

→ SESSION 4 (MAY 31, 10:30-12:10), McC13
CHAIR: I. SHARF

10:30
A Nonlinear Control Algorithm for Semi-Active Structural Vibration Damping by Adaptive Friction Dampers
J. Becker, L. Gaul

10:50
Vibration Suppression in a Flexible Gyroscopic System Using
Internal Resonance Control Strategy
S. Siddiqui, Y. Zhao, B. Singh

11:10
Stability of Harmonically Perturbed Vibratory Beam-type
Angular Rate Sensors
J. Cho, S.F. Asokanathan

11:30
Optical Modal Analysis Using a Phase Shifting Technique
A.K. Mitchell

11:50
Dynamic Stability of a Translation-based Vibratory Rate
Gyroscope
T. Wang, S.F. Asokanathan

FFHT - FLUID FLOW AND HEAT TRANSFER

→ SESSION 1 (MAY 30, 11:00-12:40), McC11
CHAIR: B.R. BALIGA

11:00
Spacing Effects of Four Opposed Jets in a Cross-flow
A. Pollard, C.G. Ball, D. Bepalko, F. Secretain, M. Uddin, L.
Wei, R. Fernandes

11:20
Second Law Analysis of a Natural Gas Fired Combined Cycle
K. Mohamed, B.V. Reddy

11:40
Tip Vortex Behind a Swept Wing with Winglet
P. Gerontakos, D. Birch, T. Lee.

12:00
Dissipation of Intense Disk-like Eye Vortices
Y. Aboelkassem, G.H. Vatistas

12:20
Turbulence by Kelvin-Helmholtz and Rayleigh-Taylor Instabilities
C. Pinilla, V.H. Chu

→ SESSION 2 (MAY 30, 14:00-15:40), McC11
CHAIR: D. NAYLOR

14:00
Adaptive Modelling Applied to Impacting Droplets
S. Afkhami, M. Bussmann

14:20
Measurement of Bulk Temperature in Thermally Developed
Laminar Flows in Pipes
N. Atabaki, B.R. Baliga

14:40
Modelling of Heat Transfer in a Facade with Integrated
Photovoltaic Solar Panels
L. Liao, A.K. Athienitis, K.W. Park

15:00
Improved Zonal Models for Indoor Airflow
E.J. Teshome, F. Haghghat

15:20
Performance Simulation of a Combined Cycle Cogeneration
System
B. Law, B.V. Reddy

→ SESSION 3 (MAY 30, 16:00-17:40), McC11
CHAIR: B.V. REDDY

16:00
Mixing by a Buoyant Jet in a Room with Side Chamber
W.D. Baines

16:20
Shielding Gas Flow in High-Rate Gas Metal Arc Welding
Torches: Design Implications
R.W. Hill, K.J. Cragin, N. Elkouh, S. Luckowski

16:40
Surface Heat Emissions from the Back of a Circular Cylinder in
a Crossflow
S. Bouhairie, V.H. Chu

17:00
Oscillating Wing Loadings with Small Trailing-Edge Strips
P. Gerontakos, T. Lee

17:20
Particle Sizing using Elements of a Particle Tracking
Velocimetry System for Granular Flows
N. Jesuthasan, B.R. Baliga, S.B. Savage

→ SESSION 4 (MAY 31, 10:30-12:10), McC11
CHAIR: B.R. BALIGA

10:30
Creeping Flow Through a Model of Fibrous Porous Media
J. Zhong, I.G. Currie, D.F. James

10:50
Determination of Maximum Effective Pore Size of Sintered
Porous Metal Plates
N. Atabaki, B.R. Baliga

11:10
Heat Exchange Efficiency of Exterior Building Wall Based on
Transport in Porous Media
K. Qiu, F. Haghghat

11:30
Mechanistic Model to Estimate Heat Transfer Coefficient in a
Circulating Fluidized Bed Combustor
G.N. Vijay, B.V. Reddy

11:50
Validation of a Numerical Model of a Complex Fenestration
System
T. Avedissian, D. Naylor

FM - FLUID MECHANICS

→ SESSION 1 (MAY 30, 11:00-12:40), FDA5
CHAIR: D. MATEESCU

11:00
Development of a Trailing Vortex Formed with Spanwise Tip
Blowing
A.G.L. Holloway, J. Bettle, S. Richardson

11:20
Boundary Layer Separation and Control at Low Reynolds
Numbers
S. Yarusevych, J.G. Kawall, P.E. Sullivan

11:40
Computational Solutions for Steady and Unsteady Viscous Flows
E. Zuppel, D. Mateescu

12:00
Experimental and Numerical Investigation of Transition in a Separated Shear Layer
S. Yarusevych J.G. Kawall P.E. Sullivan

12:20
The Impact of the Airside Velocity Field on the Latent Heat Transfer during Natural Convection
S.J.K. Bukhari, K. Siddiqui

→ SESSION 2 (MAY 30, 14:00-15:40), FDA5
CHAIR: D. GRECOV

14:00
Critical Features of Flow Around an Axisymmetric Body
C.R. Baker, T.L. Jeans, A.G. Gerber, A.G.L. Holloway, G.D. Watt

14:20
Vortex-Shedding from Step-Cylinders in Shear Flow
W. Dunn, S. Tavoularis

14:40
Combined Effect of a Short Roughness Strip and Localised Wall Suction on the Evolution of Anisotropy in a Turbulent Boundary Layer
O.M. Oyewola, O.O. Tomori

15:00
High-Speed Flow Visualization of an In-Line Multiphase Pipe Vortex
R.J. Hugo, B. de Witt

15:20
Modélisation Aérodynamique Tridimensionnelle d'une Aile Battante Propulsive
A. Brakez, Z. Zrikem, A. Mir

→ SESSION 3 (MAY 30, 16:00-17:40), FDA5
CHAIR: M.J. FLORYAN

16:00
Acoustic Resonance of Closed Coaxial Side Branches in an Annular Duct
R. Bravo, S. Ziada, M. Dokainish

16:20
Qualitative Study of the FENSAP-ICE Anti-Icing Procedure
F. Morency, H.Z. Wang, W.G. Habashi, A. Pueyo, F. Kafyeke

16:40
Study of Close Contact Melting of Ice From a Sliding Heated Flat Plate
D. Groulx, M. Lacroix

17:00
Finite Element Modelling of Flow In a Highly Permeable Porous Media Using Bubble Function Method
M. Parvazinia, V. Nassehi, R.J. Wakeman, M.H.R. Ghoreishy

17:20
Numerical Simulation of an In-Line Vortex Pipe Flow
A.A. Mohamad, R.J. Hugo

→ SESSION 4 (MAY 31, 10:30-12:10), FDA5
CHAIR: A. VINOGRADOV

10:30
Numerical Study of Laminar Flow around a Sphere Using Finite Volume Blocked-off Treatment
M.M. Abou Al-Sood, M. Birouk

10:50
Numerical Evaluation of Mean Wind Pressures on Flat Roofs with Parapets
R. Bedair, T. Stathopoulos

11:10
Computer Simulation of a Pump-Less Absorption System Using Bubble Pump
Y. Rezvanifer, M.N. Zadegan

11:30
Wind Driven Flow through Building Openings: A Wind Tunnel Study
P. Karava, T. Stathopoulos, A.K. Athienitis

11:50
A New Experimental Method for the Determination of the Effective Orifice Area based on the Acoustical Term Source
L. Kadem, Y. Knapp, P. Pibarot, E. Bertrand, L.G. Durand, R Rieu

→ SESSION 5 (MAY 31, 14:00-15:40), FDA5
CHAIR: S. DOST

14:00
Phase Ordering in Multi-Phase Polymer-Liquid Crystalline Materials
S.K. Das, A.D. Rey

14:20
A Visualization Technique for Determining the Chemical Concentration in a Porous Column
W. Dong, A.P.S. Selvadurai

14:40
Shear Rheology of Textured Carbonaceous Mesophases
D. Grecov, A.D. Rey

15:00
A Weight Loss Technique for Measuring Gas Solubility in Polymers
L. Ji, T.W. Forest, P.-Y.B. Jar

15:20
A Model for the Growth of SixGe_{1-x} Single Crystals by Liquid Phase Diffusion
M. Yildiz, S. Dost, B. Lent

→ SESSION 6 (MAY 31, 16:00-17:40), FDA5
CHAIR: C. MESKELL

16:00
Simulation of a Starting Jet Flow Using a 3D Vortex Method
D. Cox, C. Meskell

16:20
Off Design Velocity Measurements in an Impeller of a Centrifugal Volute Pump
D.A Johnson, N. Pedersen, C.B. Jacobsen

16:40
Forced Convection From A Rotating Circular Cylinder In A Uniform Shear Flow: Part 1: Analytical Results
M.L. Williams, A.S. Korobov, S.J.D. D'Alessio, J.P. Pascal

17:00
Forced Convection From A Rotating Circular Cylinder In A Uniform Shear Flow. Part 2: Numerical Results
A.S. Korobov, M.L. Williams, S.J.D. D'Alessio, J.P. Pascal

17:20
A Critical Review of Classical Force Estimation Methods for Streamlined Underwater Vehicles Using Experimental and CFD Data
T.L. Jeans, C.R. Baker, A.G.L. Holloway, A.G. Gerber, G.D. Watt

→ SESSION 7 (JUNE 1, 10:30-12:10), FDA5

CHAIR: A. DOLATABADI

10:30

Evaporation of Carbone Dioxide: A Comparative Study With Refrigerants R22 and R134A

Z. Aidoun, M. Ouzzane

10:50

An Isothermal Water Model of the Twin Belt Aluminum Casting Process

I. Mcleod, A.G.L. Holloway, A.G. Gerber

11:10

Numerical Analysis of the Effect of Substrate Location and Shape in a Cold Spray Process

Q. Zhu, V. R. Srivatsan., A. Dolatabadi

11:30

Stability of Gravitactic Suspensions Contained in a Rectangular Cavity

Z. Alloui, T.H. Nguyen, E. Bilgen

11:50

Unsteady State Thermohydraulic Modelling of Candu Reactor Fuel Channels

N. Mesmous, E. Varin, A. Teysseidou

FSI - FLUID-STRUCTURE INTERACTION

→ SESSION 1 (MAY 30, 11:00-12:40), McC204

CHAIR: M.P. PAÏDOUSSIS

11:00

Free Vibration Effects on the Three-Dimensional Wake of an Elastic Cylinder

Y. Liu, R. M.C. So, C.H. Zhang, X.Q. Wang

11:20

Turbulent Wake Structure of a Finite Circular Cylinder of Small Aspect Ratio

M.S. Adaramola, O.G. Akinlade, D. Sumner, D.J. Bergstrom, A.J. Schenstead

11:40

Three-Dimensional Dynamics of Cantilevered Pipes Conveying Fluid in the Presence of an End-Mass

M. Wadham-Gagnon, M. P. Païdoussis, C. Semler

12:00

Stability of Deploying/Extruding Beam in Dense Fluid

F. Gosselin, M.P. Païdoussis, A.K. Misra

12:20

A Simple Wake Model for Damping Controlled Fluidelastic Instability

C. Meskell

→ SESSION 2 (MAY 30, 14:00-15:40), McC204

CHAIR: D.S. WEAVER

14:00

Stability of the Nonlinear Dynamics of Clamped Shells in Contact with Fluid

K.N. Karagiozis, M.P. Païdoussis, A.K. Misra

14:20

Reduced-order Pod Models for Nonlinear Vibrations of Fluid-filled, Circular Cylindrical Shells

M. Amabili, A. Sarkar, M.P. Païdoussis

14:40

Two-Phase Fluidelastic Instability of Heat Exchanger Tube Arrays with Asymmetric Tube Support Stiffness

P.A. Feenstra, D.S. Weaver, T. Nakamura

15:00

Two-Phase Flow Induced Vibration of an Array of Tubes Preferentially Flexible in the Flow Direction

R. Violette, N.W. Mureithi, M.J. Pettigrew

15:20

Etude Expérimentale et Numérique de l'Écoulement Autour d'un Cul de Chalut

D. Marichal, G. Germain, J-V. Facq

→ SESSION 3 (MAY 31, 10:30-12:10), McC204

CHAIR: M.J. PETTIGREW

10:30

Influence of Velocity Ratio on the Turbulent Wake of a Short Stack

M.S. Adaramola, D. Sumner, D.J. Bergstrom

10:50

Effect of Cylinder Diameter on Acoustic Resonance of Two Tandem Cylinders in Cross Flow

A. Mohany and S. Ziada

11:10

Flutter of Long Cantilevered Cylinders in Axial Flow

E. de Langre, M. P. Païdoussis, O. Doaré

11:30

Couplage Fluide-Structure par Couplage des Codes Fluent et Abaqus : Application au Calcul d'une Voile

D. Marichal, B. Peseux, O. Collin, P. Muller

11:50

Fluidelastic Instability in Serrated Finned Tube Bundles

R.H. Lumsden, D.S. Weaver

→ SESSION 4 (MAY 31, 14:00-15:40), McC204

CHAIR: S. ZIADA

14:00

Numerical Simulation of a Non Linear Coupled Fluid/Structure Problem by Explicit Finite Element/Finite Volume Coupling

J.-F. Sigrist, B. Peseux, C. Lainé

14:20

Nonlinear Dynamics of Slender Flexible Cylinders Clamped at Both Ends and Subjected to Axial Flow

Y. Modarres-Sadeghi, M.P. Païdoussis, C. Semler

14:40

A New Method for Measuring Damping in Two-Phase Flow

J.E. Moran, D.S. Weaver, P.A. Feenstra

15:00

Experimental Study of Vibration Excitation Force of a Rotated Triangular Tube Bundle in Two-Phase Cross-Flow

C. Zhang, M.J. Pettigrew, N.W. Mureithi

15:20

Fluidelastic Instability in a Tube Array Subjected to Axisymmetric Jet Flow

B.J. Ledger, D.S. Weaver

- **SESSION 5 (JUNE 1, 10:30-12:10), MCC204**
CHAIR: S.J. PRICE
- 10:30
Towards the Numerical Simulation of Acoustic and Flow Field Interactions in Flows over Bluff Bodies
B. Selent, C. Meskell
- 10:50
Dynamics of a Forced 2D Cylinder Wake
M. Rodriguez, N.W. Mureithi
- 11:10
Wakes and Vortex Streets Generated by Translating Force and Force Doublet
Y.D. Afanasyev, V.N. Korabel
- 11:30
Approximation of Axial Displacement in a Two-Dimensional Fluid-Filled Elastic Tube
C.R. Johnston, M. Epstein
- 11:50
Flutter Motion of the Cylinders Conducting Annular Laminar Flows
A. Mekanik
- **SESSION 6 (JUNE 2, 10:30-12:10), McC204**
CHAIR: E. DE LANGRE
- 10:30
Experimental Characterization of a Tethered Spherical Helium Balloon in an Outdoor Environment
P. Coulombe-Pontbriand, M. Nahon
- 10:50
X-Y Towing Tank for Unsteady Fluid Mechanics Experiments
D. Sumner, J.E. Barth, O.J.P. Dansereau, J.L. Heseltine, M.G. Crane
- 11:10
Universal Wake Number Data for Two Staggered Circular Cylinders
D. Sumner, A.J. Schenstead
- 11:30
An Experimental Investigation of the Cross-Flow around a Pair of Staggered Cylinders with the Downstream Cylinder Subjected to Forced Transverse Harmonic Oscillation
W.T. Pinto, S.J. Price, M.P. Païdoussis
- 11:50
Can CFD Help in the Design of the Fishing Gear? Study of Hydrodynamic Forces Acting on Nets
D. Marichal
- **SESSION 7 (JUNE 2, 15:00-16:40), McC204**
CHAIR: D. SUMNER
- 15:00
Acoustic Resonance of Transverse Modes of Axi-Symmetric Cavity
K. Awny, S. Ziada
- 15:20
Flow-Acoustics of T-Junctions: Effect of T-Junction Geometry
Y. Li, S. Ziada
- 15:40
Issues Regarding a Hardware in the Loop Experimental Setup for Room Acoustics
D. Neculescu, W. Weiss, W. Zhang
- 16:00
Dynamical System Analysis and Chaos Detection of a Low

Dimensional Model for 2D Flow around a Cylinder Obtained by POD
S. Fardisi, S.A.Z. Jahromi, M. Mahzoon, H. Emdad

MD - MANUFACTURING AND DESIGN

- **SESSION 1 (JUNE 2, 10:30-12:10), FDA5**
CHAIR: W. WARREN
- 10:30
Mining on Moon/Mars-A review
H. Satish, P. Radziszewski, J. Ouellet
- 10:50
Exploring Tumbling Mill Natural Frequencies
P. Radziszewski, Y.Y. Quan, J. Poirier
- 11:10
Methodology for Motion Error Diagnostic of a Machine Tool Trunnion Axis Using DBB
S.H.H. Zargar, J.R.R. Mayer
- 11:30
Geometrical Modeling of a Booster Drive in Long Conveyors
J. Szymanski, L. Gladysiewicz
- 11:50
Nonlinear Elliptic Inhomogeneity under General Non Uniform Loading
M. Mahboob, P. Schiavone
- **SESSION 2 (JUNE 2, 15:00-16:40), FDA5**
CHAIR: E. BYSKOV
- 15:00
An Instrumented Lifter for Tumbling Mill Wear Monitoring
S. Martins, P. Radziszewski, W. Li, C. Benson
- 15:20
Liner Wear as a Function of Abrasive and Impact Wear Mechanisms
C. Arekar, P. Radziszewski, D. Roy, A. Faucher, S. Caron
- 15:40
The Influence of High Mean Stress and High R Ratio on the Fatigue Behavior of Components
S. Peng, M.N.K. Singh
- 16:00
Investigation of Critical Plane Models for Multiaxial Fatigue life assessment
A.K. Bhowmick, F. Ghrib
- 16:20
Identification of CDM Based Fatigue Model Using Standard Fatigue Parameters
F. Ghrib, M.D. M. Rahman, M.K.S. Madugula
- **SESSION 3 (JUNE 2, 17:00-18:40), FDA5**
CHAIR: P. RADZISZEWSKI
- 17:00
Rebuilding of CAD Model Starting from the Finite Elements Results (Case of the Parts Undergoing Bending)
B.L. Abdelmajid, B. Amara, V. François, L. Romdhane
- 17:20
The Design of a Spherical Multi-Lobe-Cam
S. Bai, J. Angeles

17:40

Experiments with Digital Force Control
I. Baksa, K. Kisfalusi, G. Stépán

18:00

A Novel Approach to Optimize Hydraulic Braking System in a Passenger Car

S. Azari, A. Eskandari, S. Azadi

18:20

On elastic and viscoelastic helices
R. Shahsavari, M. Ostoja-Starzewski

MS - MECHANICAL SYSTEMS

→ SESSION 1 (MAY 31, 14:00-15:40), McC11
CHAIR: C.M. GOSSELIN

14:00

Robotic Grasping of Unknown 3-D Objects
G.M. Bone, Y. Li

14:20

Sensing System for Safer Human-Robot Interaction
Y. Lu, L. Zeng, G.M. Bone

14:40

Powered Exoskeleton for the Human Arm
G.M. Bone, P.W. Chan

15:00

Modelling of an Anti-Tilting Outdoor Mobile Robot
D.S. Nasrallah, J. Angeles, H. Michalska

15:20

Modeling and Estimation of the Nonlinear Friction Characteristics in a Hydraulic Actuator
Y. Chinniah, S. Habibi, R. Burton, E. Sampson

→ SESSION 2 (MAY 31, 16:00-17:40), McC11
CHAIR: J. KOVECSES

16:00

A Simple Control Strategy for Overconstrained Parallel Cable Mechanisms
S. Bouchard, C.M. Gosselin

16:20

Torque Minimization of the Delta Parallel Robot
C. Baradat, V. Arakelian, S. Briot

16:40

A New Decoupled Parallel Manipulator with Four Degrees of Freedom
V. Arakelian, S. Briot

17:00

Type Synthesis of 4-DOF PS-Equivalent Parallel Manipulators: A Virtual-Chain Approach
X. Kong, C.M. Gosselin

→ SESSION 3 (JUNE 1, 10:30-12:10), McC11
CHAIR: G.M. BONE

10:30

Approaches to Modelling and Control of Contact Transitions in Mechanical Systems With Time-Varying Topology
S.A. Modarres Najafabadi, J. Kovacs, J. Angeles

10:50

Mass-Spring Representation of a Single-Link Flexible-Link Manipulator

M. Vakil, R. Fotouhi, P.N. Nikiforouk

11:10

Trajectory Tracking of a Single-Link Flexible-Link Manipulator

M. Vakil, R. Fotouhi, P.N. Nikiforouk

11:30

Comparing Robust-Adaptive Control Approach and PD Plus Gravity Compensation Method of Two 5 DOF Cooperating Robot Manipulators

M. Azadi, M. Eghtesad, B. Ghahsifard

→ SESSION 4 (JUNE 2, 10:30-12:10), McC11
CHAIR: J. ANGELES

10:30

A Case Study on the Stability of Digital Force Control of Robotic Manipulators

L. Kovacs, G. Stepan, J. Kovacs

10:50

Extended Intersection Approach for Solving Serial Manipulator Inverse Kinematics

G.M. Bone

11:10

Comparison of Robustness Indices and Introduction of a Tolerance Synthesis Method for Mechanisms

S. Caro, F. Bennis, P. Wenger

11:30

A Generalized Transmission Index for Spatial Mechanisms and Its Application on Mechanisms with Higher Pairs

C. Chen, J. Angeles

MTMM - MODERN TOPICS IN MECHANICS OF MATERIALS

→ SESSION 1 (MAY 30, 11:00-12:40), McC12
CHAIR: S. POTAPENKO

11:00

The Design of Harmonic Shapes in Finite Elasticity
P. Schiavone, G.F. Wang, C-Q. Ru

11:20

The Effect of van der Waals Interaction on Free Vibration of Multiwall Carbon Nanotubes

C.Y. Wang, C.Q. Ru, A. Mioduchowski

11:40

Fundamental Solutions in Piezoelectricity. The Application of Boundary Integral Equation Method in the Linear Theory of Piezoelectricity

E. Lioubimova, P. Schiavone

12:00

Compression of a Flat Sheet of Dielectric Elastomer
J.L. Wegner, J.B. Haddow

12:20

Brain Biomechanics: Quasi-linear Viscoelastic Models for Short and Long Time Scale Brain Injuries

C.S. Drapaca, S. Sivaloganathan, G. Tenti

→ SESSION 2 (MAY 30, 14:00-15:40), McC12
CHAIR: P. SCHIAVONE

14:00
Biomechanics of Brain Tissue: Constitutive Equations
M. Kohandel, S. Sivaloganathan, G. Tenti

14:20
Modelling and Simulation of Bone Fracture Healing
Y.G. Bao, X.D.Wang

14:40
Propagation of Torsional Waves in an Unbounded Cosserat Continuum
S. Potapenko

15:00
Effect of Interphase Layer on Electroelastic Stresses within an Elliptical Inclusion in Anti-plane Shear
L.J. Sudak

15:20
Mesoscale Bounds in Finite Elasticity of Random Composites
Z. Khisaeva, M. Ostoja-Starzewski

SM - SOLID MECHANICS

→ SESSION 1 (MAY 30, 16:00-17:40), McC12
CHAIR: M. OSTOJA-STARZEWSKI

16:00
Betti's Reciprocal Relationships for Disc Inclusion Problems
A.P.S. Selvadurai

16:20
A General Solution to the Plane Problems of Micropolar Elasticity
W.E. Warren and E. Byskov

16:40
A Micropolar Formulation of the Desai Hierarchical Model for Multiphase Materials
A. Scarpas, X. Liu and C. Kasbergen

17:00
Mesoscale Bounds on Effective Thermal Expansion of Random Composites
X. Du, M. Ostoja-Starzewski

17:20
Elastoplasticity of Random Heterogeneous Materials
W. Li, M. Ostoja-Starzewski

→ SESSION 2 (MAY 31, 10:30-12:10), CHAIR: A.P.S. SELVADURAI

10:30
Internal Voids and Crack Characterization in Cold Heading of Dual Phase Steel
A. Sabih, J.A. Nemes, P. Wanjara

10:50
Weighted Average Material Model for X100 Steel
S. Verbit, L.N. Pussegoda, D. Redekop

11:10
On the Development of a Compressible Pseudo-Strain Energy Density Function for Hyper-elastic Materials
H. Ghaemi, K. Behdinin

11:30
Experimental Evaluation of an Energy-Based Approach for Predicting Local Ratcheting in Particulate Metal Matrix Composites
G.M. Owolabi, M.N.K. Singh

11:50
Effet de l'Absorption d'Eau sur le Comportement Mécanique en Cisaillement d'un Composite (Tissus de Verre/Résine Époxyde)
A. Naceri, A. Vautrin

SS - SOLIDS & STRUCTURES

→ SESSION 1 (MAY 31, 14:00-15:40), McC13
CHAIR: G. MCCLURE

14:00
Comparison of Gear Standards for Bending Failure
D. Martinez Leal, J.J. Cabello Eras, R.G. Espinosa, D. Redekop

14:20
Comparison of Gear Standards for Surface Durability
D. Martinez Leal, J.J. Cabello Eras, R.G. Espinosa, D. Redekop

14:40
Stress Concentration Analysis of Tubular DT Joints
T.A. Oumarou, E. Evgin, D. Redekop

15:00
Practical Convergence-Divergence Checks for Stress Analysis with Finite Elements
G.B. Sinclair, Y. Lu and J.A. Smouse

15:20
Effect of Lumbar Posture on Trunk Active-Passive Load Sharing and Stability in Static Lifting
N. Arjmand, A. Shirazi-Adl

→ SESSION 2 (MAY 31, 16:00-17:40), McC13
CHAIR: G.B. SINCLAIR

16:00
Micromechanical modeling of fiber reinforced elasto-viscoplastic polymer matrix composites and structures
L. Adam, R. Assaker, I. Doghri, O. Pierard

16:20
Validation of a New, Locking-Free Beam Finite Element
E. Byskov, F. Westarp, J. Christoffersen

16:40
A Comparative Analysis of two Posteriori Error Estimators for the Finite Element Method
A.H. ElSheikh, S.E. Chidiac, S. Smith

17:00
Raideurs Équivalentes des Vis et des Boulons
F. Alkatan, P. Stéphane, J. Guillot

17:20
Raideurs Équivalentes des Pièces dans un Assemblage Boulonné
F. Alkatan, P. Stéphane, J. Guillot

→ SESSION 3 (JUNE 1, 10:30-12:10), McC13
CHAIR: P. HUBERT

10:30
Buckling of a Torus-Cylinder Structure Using the FEM
X.H. Wang, L. Xu, D. Redekop

10:50
Ultimate Load Carrying Capacity of Timber Shear Walls using FEA
L. Wu, D. Redekop, M.E. Mohareb

11:10
Thermal Distortion Modelling on CMM structures
T.O. Ekinici, J.R.R. Mayer, G. Cloutier

11:30
A General 3D L-Section Beam Finite Element for Elastoplastic Large Deformation Analysis
P.S. Lee, G. McClure

11:40
Application of Receptance Coupling to Synovial Joint
P.G. Park, S.S. Park

→ SESSION 4 (JUNE 2, 10:30-12:10), McC13
CHAIR: W.L. CLEGHORN

10:30
Elastic-Brittle-Plastic Analysis of Underground Openings in Hoek-Brown Rock
S.K. Sharan

10:50
Buckling of Web-Post in Castellated Beams
K. Weicker, D. Redekop, M.E. Mohareb

11:10
Validation du Modèle DDM Multicouches Homogénéisé pour le Carton Ondulé à Travers un Test de Flexion à Trois Points
Nabil Talbi, Rezak AYAD, Z. Aboura, S. Allaoui

11:30
A Novel TKP Design with Lower Predicted Contact Pressure
M.T. Manzari, A. Hashemi

11:50
A New Approach to Predict Face Dimpling Load for Honeycomb Core Laminated Sandwich Panels
M J. Jamali, I. Rajabi

→ SESSION 5 (JUNE 2, 15:00-16:40), McC13
CHAIR: S.K. SHARAN

15:00
Free Vibration of Thin Plates with Finite Nodal Method
Y. Yao, M. Packirisamy, R.B. Bhat

15:20
Perfectly Matched Layer versus Hybrid Modeling of Guided, PSV Waves in Plates
A. Mahmoud, N. Popplewell, A. Shah

15:40
Applications of Stress-Based Finite Element Method on Euler-Bernoulli beams
Y.L. Kuo, W.L. Cleghorn, K. Behdinan

16:00
Dynamic Modeling of a Viscoelastic Sandwich
A. Oulmane, E. Farah, A. Ross

16:20
Shape Factors for Cylindrical Intakes Located in Transversely Isotropic Porous Media
R. Foroutan, A.P.S. Selvadurai

→ SESSION 6 (JUNE 2, 17:00-18:40), McC13
CHAIR: A. SHIRAZI-ADL

17:00
On the Removal of Stress Singularities from Bonded Bimaterial Interfaces
G.B. Sinclair, A.J. Birnbaum, J. Jiang

17:20
A Combined Approach for Anisotropic Materials Analysis
G. Bandé, J.A. Nemes

17:40
Compensating Stiffness in a Peripherally Heated Rotating Thin Disk
J. Poirier, P. Radziszewski

18:00
Post-Elastic Dynamic Analysis of a Transmission Tower
X.H. Zhang, G. McClure, P. Guilbault, T. Holmas

18:20
Numerical Study of Elliptical Cracks in Cylinders with a Thickness Transition
A. Saffih, S. Hariri

TEP - THERMO-ELECTRIC PHENOMENA

→ SESSION 1 (JUNE 2, 17:00-18:40), McC204
CHAIR: R.J. HILL

17:00
Modeling Electrowetting-based Droplet Actuation in Microchannel
A. Dolatabadi, K. Mohseni, P. Wood-Adams

17:20
A New Thermal Storage System for the Management of Both Solar and Electric Energy
Z.A. Hammou, M. Lacroix

17:40
Electroactive Polymers: Properties, Applications, Challenges
A.M. Vinogradov

18:00
Prediction and Control of Protective Banks in Electric Arc Furnaces by Inverse Heat Transfer
O. Tadrari, M. Lacroix

18:20
Electrokinetic Transport in Polymer Gels with Spherical Charged Inclusions
R.J. Hill

T - TURBULENCE

→ SESSION 1 (MAY 31, 10:30-12:10), McC210
CHAIR: B.A. FLECK

10:30
Use of Energy Scale Budget to Quantify Effect of Initial Conditions on Decaying Grid Turbulence
P. Lavoie, R.A. Antonia, L. Djenidi

10:50
Statistics of Passive Scalar in a Turbulent Jet
A. Benaissa, J. Lemay

11:10
Scalar Concentration Reduction in a Contaminant Cloud
T.P. Schopflocher, C.J. Smith, P.J. Sullivan

11:30
Effect of Initial Conditions in the Near and Far Fields of a Co-Flowing Jet
M. Uddin, A. Pollard

11:50

Turbulent Jet Inside an Enclosure

K. Ness, B.A. Fleck, D.J. Wilson, A. Benaissa

→ **SESSION 2 (MAY 31, 14:00-15:40), McC210**
CHAIR: A. BENAISSA

14:00

An Anisotropic Turbulence/Wave Theory of Atmospheric Stratification and a Multifractal Model

S. Lovejoy, D. Schertzer

14:20

Lien entre les Phénomènes de Dislocation et l'Écoulement Secondaire pour l'Écoulement d'Interaction Couche de Mélange - Sillage

C. Braud, D. Heitz, G. Arroyo, J. Delville, J.P. Bonnet

14:40

Wave Turbulence Decomposition

K. Siddiqui, M. Loewen

15:00

Scaling and Reynolds Number Effects on Plume Entrainment and Trajectory

K. Shahzad, B.A. Fleck, D.J. Wilson

15:20

Jet Source Turbulence for Small Scale Experiments

K. Shahzad, B.A. Fleck, D.J. Wilson

→ **SESSION 3 (MAY 31, 16:00-17:40), McC210**
CHAIR: K. SIDDIQUI

16:00

Experiments on Turbulent Channel Flow Subject to System Rotation

Y. Maciel, G. Yan, G. Dumas

16:20

Investigation of the 3D Inlet Flow Characteristics in a Rotating Channel Setup

S. Julien, F. Torriano, G. Dumas, Y. Maciel

16:40

Effect of Surface Roughness on the Higher-Order Moments in a Turbulent Boundary Layer

O.G. Akinlade, D.J. Bergstrom

17:00

Conditional Quadrant Analysis of the Reynolds Stress in Open Channel Flow

V. Roussinova, N. Biswas, R. Balachandar

17:20

Covariance of Passive Scalars Emitted from Concentrated Sources in Turbulent Channel Flow

Etienne Costa-Patry, L. Mydlarski

→ **SESSION 4 (JUNE 1, 10:30-12:10), McC210**
CHAIR: L. MYDLARSKI

10:30

Computational Study of Turbulent Flow Around a Sphere Using Finite Volume Blocked-off Treatment

M.M. Abou Al-Sood, M. Birouk

10:40

A Turbulence Model for Dividing and Combining Open Channel Flows

M.Satish, F. Ma, N. El-Jabi