# IFIT 2016 - Preliminary Program

## Day 1: December 1st

<table>
<thead>
<tr>
<th>Time</th>
<th>N3</th>
<th>Sala R</th>
<th>Sala E</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.00 - 9.20</td>
<td>OPENING (N3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.30-10.50</td>
<td>Bio 1</td>
<td>Reliab</td>
<td>Rob 1</td>
</tr>
<tr>
<td>10.50-11.10</td>
<td>Coffee Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.10-12.30</td>
<td>Bio 2</td>
<td>Transp 1</td>
<td>Rob 2</td>
</tr>
<tr>
<td>12.30-14.30</td>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.30-16.10</td>
<td>MB + Hist</td>
<td>Transp 2</td>
<td>Trib 1</td>
</tr>
<tr>
<td>16.10-16.30</td>
<td>Coffee Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.30-18.30</td>
<td>Special Session (N2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.00</td>
<td>Conference Banquet</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Day 2: December 2nd

<table>
<thead>
<tr>
<th>Time</th>
<th>N3</th>
<th>Sala R</th>
<th>Sala E</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.30-10.50</td>
<td>Bio 3 + Transp 3</td>
<td>Trib 2 + Rob 3</td>
<td>Vib 1</td>
</tr>
<tr>
<td>10.50-11.10</td>
<td>Coffee Break</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.10-12.10</td>
<td>Bio 4</td>
<td>Link</td>
<td>Vib 2</td>
</tr>
<tr>
<td>12.10-12.30</td>
<td>CLOSING (N3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.30-14.30</td>
<td>Lunch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.30</td>
<td>IFToMM ITALY</td>
<td></td>
<td>Tour to be defined</td>
</tr>
</tbody>
</table>
Biomechanical Engineering (Bio 1)

**Design and Implementation of a Low-Cost Mechatronic System for Biomechanical Analysis of the Human Locomotion**
Paolo Boscariol, Alessandro Gasparetto, Nicola Giovanelli, Stefano Lazzer and Lorenzo Scalera

**A study of feasibility of a portable limb exercise device**
Giuseppe Carbone, Marco Ceccarelli and Candela Arostegui

**DARTAGNAN a self-balanced rehabilitation robot able to work in active and passive modes on both sides of upper and lower limbs**
Guido Danieli, Paola Nudo, Michele Perrelli and Maurizio Iocco

**Dynamic Analysis of Handcycling: Mathematical Modelling and Experimental Tests**
Ghazaleh Azizpour, Abdelmajid Ousdad, Giovanni Legnani, Giovanni Incerti and Matteo Lancini

Biomechanical Engineering (Bio 2)

**A kinematic solution of a novel leg mechanism with parallel architecture**
Matteo Russo and Marco Ceccarelli

**Multi-target Planar Needle Steering with a Bio-Inspired Needle Design**
Christopher Burrows, Fangde Liu, Alexander Leibinger, Riccardo Secoli and Ferdinando Rodriguez Y Baena

**Development of an Active Force Plate for Testing Lower-limb Prostheses**
Cristiano Marinelli, Hermes Giberti and Ferruccio Resta

**Determination of the Human Arm Stiffness Efficiency with a Two Antagonist Muscles Model**
Daniele Borzelli, Stefano Pastorelli and Laura Gastaldi

Biomechanical Engineering (Bio 3)

**Design of a miniaturized safety clamping device for portable kidney replacement systems**
Paolo Boscariol, Giovanni Boschetti, Roberto Caracciolo, Mauro Neri, Dario Richiedei, Claudio Ronco and Alberto Trevisani

**Conceptual design of a mechatronic biomedical wearable device for blood ultrafiltration**
Giovanni Boschetti, Aldo Dalla Via, Nicola De Rossi, Francesco Garzotto, Mauro Neri, Luca Pamato, Claudio Ronco and Alberto Trevisani

Biomechanical Engineering (Bio 4)

**Design of an Underactuated Hand Exoskeleton with Joint Estimation**
Mine Sarac, Massimiliano Solazzi, Daniele Leonardis, Edoardo Sotgiu, Massimo Bergamasco and Antonio Frisoli

**Standard and natural motion protocols for the kinetic measurements of the squat**
Nicola Sancisi, Marco Cocconcelli, Riccardo Rubini and Vincenzo Parenti Castelli

**Design and Simulation of an Assisting Mechanism for Arm Exercises**
Betsy D. M. Chaparro-Rico, Daniele Cafolla, Marco Ceccarelli and Eduardo Castillo-Castaneda
History of Mechanism and Machine Science (Hist)

Role of Scientific-Technical Museums in the Future of Mechanical Science
Alberto Rovetta and Edoardo Rovida

An Analysis of the Hydraulic Saw of Hierapolis
Cesare Rossi, Sergio Savino and Francesco Timpone

Linkages and Mechanical Controls (Link)

Riccati equation based nonlinear filter: a case study for hydraulic actuators in presence of dead-zone
Salvatore Strano and Mario Terzo

Trajectories generation with constant extrusion rate for experimentations on AM techniques and extrusion based technologies
Hermes Giberti, Luca Sbaglia and Marco Parabiaghi

On the Design of Pneumatic Actuators: A Structural Optimization with a FEM-based Approach
Giovanna Adele Naselli, Matteo Zoppi and Rezia Molfino

Multi-Body Dynamics (MB)

Multibody model of under-actuated tendon driven finger to study the antagonist tendon
Sergio Savino

A model reduction strategy for flexible-link multibody systems
Ilaria Palomba, Dario Richiedei and Alberto Trevisani

Reliability (Reliab)

Topology Optimization and Analysis of Static Transmission Error in Lightweight
Jakub Korta, Domenico Mundo, Giuseppina Ambrogio, Barbara Folino, Shadi Shweiki and Luigino Filice

A strategy for moving cable driven robots safely in case of cable failure
Giovanni Boschetti, Chiara Passarini and Alberto Trevisani

Approaches to the Detectability of Faults in Railway Pantograph Mechanism
Giancarlo Santamato, Massimiliano Gabardi, Massimiliano Solazzi and Antonio Frisoli

Behaviour of tilting-pad journal bearings in case of large manufacturing errors
Steven Chatterton, Phuoc Vinh Dang, Paolo Pennacchi and Andrea Vania

Robotics and Mechatronics (Rob 1)

A new automated 2 DOFs 3D desktop optical scanner
Maria Cristina Valigi, Silvia Logozzo and Gabriele Canella

Adam’s Hand: an underactuated robotic end-effector
Giovanni A. Zappatore, Giulio Reina and Arcangelo Messina
**Automatic Plant for Fibers Extraction from Broom**
Pasquale Francesco Greco, Gianluca La Greca, Gabriele Larocca, Sebastiano Meduri, Basilio Sinopoli, Domenico Battaglia, Attilio Caseti, Armando Alose, Giuseppe Chidichimo and Guido Danieli

**Functional design of a robotic gripper for adaptive robotic assembly**
Fabio Oscari, Simone Minto and Giulio Rosati

**Robotics and Mechatronics (Rob 2)**

**Optimal design of a reconfigurable end-effector for cable-suspended parallel robots**
Luca Barbazza, Damiano Zanotto, Giulio Rosati and Sunil K. Agrawal

**Kinematic Optimization of a 2DoF PRRRP Manipulator**
Simone Cinquemani, Hermes Giberti and Giovanni Legnani

**Optimized trajectory planning of pick and place operations to be performed by cable-driven parallel robots**
Luca Barbazza, Fabio Oscari, Simone Minto and Giulio Rosati

**Robotics and Mechatronics (Rob 3)**

**An innovative method for sizing actuating systems of manipulators with generic tasks**
Hermes Giberti, Enrico Fiore and Giacomo Bonomi

**Experimentally based design of a manually operated baler for straw bale construction**
Walter Franco, Giuseppe Quaglia and Carlo Ferraresi

**Transportation Machinery (Transp 1)**

**Fast Calibration Procedure of the dynamic model of an Autonomous Underwater Vehicle from a reduced set of experimental data**
Benedetto Allotta, Riccardo Costanzi, Luca Pugi, Alessandro Ridolfi and Andrea Rindi

**Braking energy recovery in high speed trains: an innovative model**
Amedeo Frilli, Enrico Meli, Daniele Nocciolini, Simone Panconi, Luca Pugi and Andrea Rindi

**Dynamic model and instability evaluation of an articulated mobile agri-robot**
Giovanni Carabin, Alessandro Gasparetto, Fabrizio Mazzetto and Renato Vidoni

**NVH analysis of automotive components: a carbon fiber suspension system case**
Alessandro Fasana, Massimiliana Carello, Alessandro Ferraris and Davide Berti Polato

**Transportation Machinery (Transp 2)**

**Dynamics of a Tethered Rover on Rough Terrain**
Stefano Seriani, Paolo Gallina and Armin Wedler

**Wind propulsion for robot surface mobility**
Giulio Reina, Mario Foglia and Giovanni Boschetti

**Anti-dive front suspension for agricultural tractors: dynamic model and validation**
Francesco Biral, Riccardo Pelanda and Alberto Cis
Transportation Machinery (Transp 3)

**Dynamic model of an independent carts system**
Jacopo Cavalaglio Camargo Molano, Stefano Rossi, Marco Cocconcelli and Riccardo Rubini

**Tyre-road adherence conditions estimation for intelligent vehicle safety applications**
Mojtaba Sharifzadeh, Ahmad Akbari, Arash Farnam, Adolfo Senatore and Francesco Timpone

Tribology (Trib 1)

**Tilting Pad Journal Bearing TEHD Analysis: An Innovative Model**
Amedeo Frilli, Enrico Meli, Daniele Nocciolini, Simone Panconi, Luca Pugi, Andrea Rindi and Stefano Rossin

**Thermo-hydrodynamic analysis of a tilting pad journal bearing with a general purpose CFD software**
Marco Del Chiaro, Paola Forte, Francesco Torrigiani and Enrico Ciulli

**Multiple holes rectangular gas thrust bearing: dynamic stiffness calculation with lumped parameters approach**
Federico Colombo, Mona Moradi, Terenziano Raparelli, Andrea Trivella and Vladimir Viktorov

**Theoretical and experimental study of a rectangular grooved-pocketed air pad**
Colombo Federico, Danial Ghodsiyeh, Terenziano Raparelli, Andrea Trivella and Vladimir Viktorov

Tribology (Trib 2)

**Experimental Identification of an Aerostatic Thrust Bearing**
Federico Colombo, Luigi Lentini, Terenziano Raparelli and Vladimir Viktorov

**Experimental analysis of the influence of the electrical arc on the wear rate of contact strip and contact wire in a.c. system**
Giuseppe Bucca, Andrea Collina and Ezio Tanzi

Vibrations (Vib 1)

**Low-cost Experimental Assessment of Forces in the Contact Bridge-Soundboard of Stringed Musical Instruments**
Enrico Ravina

**Vibration Modes of Piezoelectric Bimorphs: a Sensitivity Analysis**
Alberto Borboni, Cinzia Amici, Valter Cappellini and Rodolfo Faglia

**Concurrent Active Control and Dynamic Structural Modification in the Design and the Optimization of Vibrating Systems**
Dario Richiedei, Roberto Belotti and Roberto Caracciolo

**A vibration isolator based on magneto-rheological elastomer**
Renato Brancati, Giandomenico Di Massa and Stefano Pagano
Vibrations (Vib 2)

A Numerical-Analytical Model for the Study of the Elasto Kinematic Behavior of a Macpherson Suspension
Francesco Timpone

A smart system for shock and vibration isolation of sensitive electronic devices on-board a vehicle
Stefano Pagano, Salvatore Strano, Giandomenico Di Massa, Marco De Michele, Giovanni Pisani, Giuseppe Frisella and Sergio Lippolis

Wavelet analysis of Gear rattle induced by a multi-harmonic excitation
Renato Brancati, Ernesto Rocca, Sergio Savino and Francesco Timpone

Special Session in honor of prof. Aldo Rossi for his 70th birthday
Chairman: prof. Carlo Ugo Galletti

Analytical and Multibody Modelling of a Quick-Release Hook Mechanism
Luca Bruzzone, Davide Bonatti, Giovanni Berselli and Pietro Fanghella

Evolution of a Dynamic Model for Flexible Multibody Systems
Paolo Boscariol, Paolo Gallina, Alessandro Gasparetto, Marco Giovagnoni, Lorenzo Scalera and Renato Vidoni

Anti-Hedonistic Mechatronic Systems
Lorenzo Scalera, Paolo Gallina, Alessandro Gasparetto and Marco Giovagnoni

On the use of cable-driven robots in early inpatient stroke rehabilitation
Giulio Rosati, Stefano Masiero and Aldo Rossi