

# **Association for Machines and Mechanisms News Bulletin**

**Volume 8, No. 1**

**January 2016**



## **Objectives and Activities**

The main objective of AMM is to contribute to mechanical design at all levels starting from academic research to industrial initiatives, thereby enhancing the quality and reliability of indigenous machines. With this in view, AMM organises the International & National Conference on Machines and Mechanisms, iNaCoMM, and the workshops on Industrial Problems on Machines and Mechanisms, IPRoMM regularly.

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## **Message from the Editor-in-Chief**

### **First of all Wish You All a Very Happy and Warm New Year 2016!**

In this New Year, Bulletin of the Association of Machines and Mechanisms (AMM) **volume 8, issue No. 1, January 2016** is now ready for publication. Dr. Shankar Sehgal, Zonal Vice President (North), took the responsibility to bring out this issue. Dr. G. Saravana Kumar, Secretary AMM, Dr. C. Amarnath, President AMM and other office bearers of AMM have also extended their support for this issue as usual.

We know that the iNaCoMM-2015 was just concluded at IIT, Kanpur. The minutes of the **GBM** of the AMM held during iNaCoMM- 2015 is there in this Bulletin.

Two reports are included in this issue. The first report is on the proceedings of the **2<sup>nd</sup> International and 17<sup>th</sup> National Conference on Machines and Mechanisms, iNaCoMM 2015**. Thanks to the Organizing Team from IIT Kanpur for compiling the report. The second one is a brief report on the 2015 IFToMM World Congress Held at Taipei, Taiwan on October 25-30, 2015. The detail of the activities of the Indian Delegation at Taiwan during this congress is narrated in this article.

The Editor-in-Chief sincerely acknowledges the role of office bearers and members of the Editorial Team for the write ups.

AMM members are requested to contribute articles and send the same to the editorial team for April 2016 issue. Constructive suggestions, comments for improvement of the Bulletin of the AMM are most welcome. On behalf of the Editorial Team of the Bulletin of AMM, I express my sincere gratitude towards all concerned for their support, wishes and suggestions for bringing out of this Bulletin.

I reiterate again that active members of the AMM may think whether an International Journal of the AMM can be thought of in near future to promote the Machines and Mechanisms community further.

**Hope you all have a wonderful New Year 2016!**

**Prof. Santanu Das**  
**Editor-in-Chief**

## **From the Zonal Vice President (North)**

Wishing you a very Happy New Year 2015 !

Seeing is believing.

Learning becomes easy and enjoyable when we can see or visualize about the things to be learnt. This might be the reason why a child is shown the picture of an apple while teaching him about the first alphabet. Showing a real apple would do even better. Similarly, teaching robotics becomes more enjoyable if actual robotic kits are readily available for students for hands-on-experience.

For me, the most fascinating thing about Mechanical Engineering, in general, and Machines & Mechanisms, in particular, is that one can easily see or visualize the parts of machines and mechanisms.

Distant objects are difficult to see using naked eyes. But such things can be easily seen using telescopes. Small sized bacteria cannot be seen using naked eye, but it is possible to see those using microscopes. Human eyes are not capable of seeing the electrons, but we have machines and mechanisms which can be used to see or visualize the electrons.

Air can't be seen, but we can easily show its presence through simple experiments. Electric current flowing through a wire can't be seen, but we have instruments to prove its presence. Science has also proved the presence of the God particle. Similarly, God can also not be seen, but can we show His presence or for that matter absence through some sort of experiments?

The idea is: Can we develop a machine or mechanism or some scientific method for proving the presence of God?

**Dr. Shankar Sehgal  
Zonal Vice President (North)**

## About the Association of Machines and Mechanisms (AMM)

The AMM headquarter is currently located at the Department of Engineering Design, IIT Madras. A new set of office bearers have taken charge of the affairs of AMM. AMM invites both individual and corporate membership from Indian academia, research organizations and industry. Membership benefits and other information about AMM are available at [www.ammindia.org](http://www.ammindia.org). The body of Zonal Vice Presidents (ZVPs) is active over the past several years with representations from the four corners of the country. They are playing the role of nodal agencies so as to decentralise the AMM official activities and to organise workshops under the aegis of AMM to popularise the mechanism science in their respective regions. They also form the editorial team of this news bulletin. AMM invites contributory articles from its members and others working in the various fields of mechanisms science for this quarterly news bulletin. Interested people can contact the editorial team.

### Office Bearers of the AMM:

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**Knowing ignorance is strength.  
Ignoring Knowledge is sickness.**

**--- Lao Tsu**

# About the International Federation for the Promotion of Mechanism and Machine Science (IFToMM)

## How IFToMM can be reached

- Through your local Member Organization, to become active in IFToMM
- Through an IFToMM Technical Committee Chairperson, to participate in a specific activity
- Through the IFToMM Executive Council
- Through the IFToMM Secretary General: Prof. Teresa Zielińska, Warsaw University of Technology, MEdI, ul.Nowowiejska 24, 00-665 Warsaw, Poland



IFToMM Presidents

From left to right: Giovanni Bianchi (1984-1987 and 1988-1991), Arcady Besnosov representing Ivan I. Artobolevsky (1969-1971 and 1972-1975), Bernard Roth (1980-1983), Jorge Angeles (1996-1999), Kenneth J. Waldron (2000-2003 and 2004-2007), Leonard Maunder (1976-1979), Adam Morecki (1992-1995), Marco Ceccarelli (2008-2011 and 2016-2019), Yoshiko Nakamura (2012-2015)

## Main activities of IFToMM

- meetings, conferences, publications, direct collaboration
- 47 IFToMM Members of territory and national Organizations
- 13 Technical Committees:
  - Biomechanical Engineering
  - Computational Kinematics
  - Gearing and Transmissions
  - Linkages and Mechanical Controls
  - Micromachines
  - Multibody Dynamics
  - Reliability
  - Robotics and Mechatronics
  - Rotordynamics
  - Sustainable Energy Systems
  - Transportation Machinery
  - Tribology
  - Vibrations
- 4 Permanent Commissions:
  - Communications, Publications and Archiving
  - Education
  - History of MMS
  - Standardization of Terminology
- 5 affiliated Journals and 2 book series:
  - Mechanism and Machine Theory  
<http://www.journals.elsevier.com/mechanism-and-machine-theory/>
  - Open-access Mechanical Sciences  
<http://www.mech-sci.net>
  - Chinese Journal of Mechanical Engineering  
<http://www.cjmet.net>
  - Journal of Vibration Engineering & Technologies  
<http://www.tvi-in.com/>
  - Mechanics Based Design of Structures and Machines  
<http://www.tandf.co.uk/journals/titles/15397734.asp>
- Book series on MMS  
<http://www.springer.com/series/8779>
- Book series on History of MMS  
<http://www.springer.com/series/7481>
- A World Congress every 4 years



## International Federation for the Promotion of Mechanism and Machine Science

### Mission

To promote research and development in the field of Machines and Mechanisms by theoretical and experimental methods, along with their practical application

### Vision

To provide leadership for cooperation and development of modern results in the Mechanism and Machine Sciences by assisting and enhancing international collaboration

### IFToMM webpage:

<http://www.ifomm.org>

IFToMM, January 2016

## Bodies of IFToMM

### General Assembly

The General Assembly is the supreme body of the Federation and determines its policy. It is composed of the Chief Delegates of IFToMM Members and members of the Executive Council.

### Executive Council

The Executive Council manages the affairs of the Federation between the sessions of the General Assembly. It is elected every four years, meets annually, and is composed of the President, Vice-President, Secretary-General, Treasurer, and six ordinary members.

### EC 2016-2019

President: Marco Ceccarelli (Italy); Vice-President: Chang Shuo-Hung (China-Taipei); Secretary General: Zielińska Teresa (Poland); Treasurer: Carretero Juan Antonio (Canada); Past President: Yoshikiko Nakamura (Japan); EC members: Corves Burkard (Germany), Ghosal Ashitava (India), Huang Tian (China-Beijing), Merlet Jean Pierre (France), Viadero Fernando (Spain), Can Dede (Turkey)

### Commissions and Committees

Each Permanent Commission and Technical Committee is composed of a Chairperson, appointed by the Executive Council, a Secretary and members, nominated by the Chairperson and appointed by the Executive Council. A Chairperson shall not serve for more than two terms consecutively. The general goals for the work of the Commissions and Committees are aimed at promoting their fields of interest by attracting researchers and practitioners, including young individuals, in order to:

- define new directions in research and development within their technical areas;
- establish contacts between researchers and engineers;
- initiate and develop bases and procedures for modern problems;
- promote the exchange of information;
- organize national and international symposia, conferences, summer schools, and meetings.

### Member Organizations

ARMENIA	AUSTRALIA
AUSTRIA	AZERBAIJAN
BELARUS	BRAZIL
BULGARIA	CANADA
CHINA-BEIJING	CHINA-TAIPEI
CROATIA	CZECH REPUBLIC
DENMARK	EGYPT
FINLAND	FRANCE
GEORGIA	GERMANY
GREECE	HUNGARY
INDIA	ISRAEL
ITALY	JAPAN
KAZAKHSTAN	KOREA
LITHUANIA	MACEDONIA
MEXICO	NETHERLANDS
PERU	POLAND
PORTUGAL	ROMANIA
RUSSIA	SERBIA
SINGAPORE	SLOVAKIA
SLOVENIA	SPAIN
SWITZERLAND	TUNISIA
TURKEY	UKRAINE
UNITED KINGDOM	USA
VIETNAM	



Taipei, China-Taipei, venue of the 14th IFToMM World Congress, 25-30 October, 2015  
[www.ifomm2015.tw](http://www.ifomm2015.tw)

### IFToMM supported Conferences (selection)

- Int. Symposium on History of Machines and Mechanisms (HMM)
- Workshop on Computational Kinematics (CK)
- Rotordynamics Conference
- CISM-IFToMM Symposium on Robot Design, Dynamics, and Control (ROMANSY)
- Mechanical Transmission Applications (MeTrApp)
- Symposium on Robotics & Mechatronics (ISRM)
- European Conf on Mechanism Science (EUCOMES)
- Asian Conference on MMS (ASIAN MMS)
- Workshop on Medical and Service Robots (MESROB)
- Summer Schools

### Conferences under IFToMM patronage (a selection)

- Local conferences of the IFToMM Members
- Symposium on Theory and Practice of Robot and Manipulators (SYROM)
- IFToMM-FelbIM Int. Symposium on Multibody Systems and Mechatronics (MUSME)

### Joining IFToMM Member Organizations gives the following benefits:

- international contacts for potential developments of joint projects;
- reduced registration fees for IFToMM supported conferences;
- participation and contribution in IFToMM activities and publications;
- flow of information on IFToMM activities.

You are kindly invited to join IFToMM and its activities

IFToMM, January 2016

# **Minutes of GENERAL BODY MEETING of AMM**

## **MINUTES OF GENERAL BODY MEETING OF THE ASSOCIATION OF MACHINES AND MECHANISMS**

Date: 16th December, 2015, Time: 5.30 – 6.30 p.m.

Venue: Outreach Auditorium, IIT Kanpur, Kanpur- 560 012

The meeting was chaired by Prof. C. Amarnath, president AMM, Prof. A. Ghosal, Vice President AMM and Prof. G. Saravana Kumar, Secretary AMM. The Secretary conducted the meeting. The meeting was open to all attendees of iNaCoMM apart from AMM members. The meeting was attended by about 35 people. The minutes of the meeting are as following:

- The President welcomed the gathering and invited the non members to become life members of the organization.
- The Secretary presented a concise report of activities of AMM. It was recorded with appreciation that Prof. A. Ghosal has been elected to be Executive Member of IFToMM for the period 2016-2019.
- The Secretary presented statement of accounts on behalf of the Treasurer.
- Discussions / declarations on the next venue for iNaCoMM (Dec 2017) and IPRoMM (Dec 2018). Since no expression of interest was received as on the date of meeting, it is open for interested institutions to send the proposals. Some of the potential hosts suggested by members are Bombay (IIT / Homi Bhabha National Institute), IT-BHU, Varanasi (IT-BHU is celebrating its 100 years in the year 2016), VSSC, Jamia Millia Institute and NIT Surat. AMM shall communicate with them and based on the interest expressed the venue and the organizing team would be decided. Since there is enough time for IPRoMM, it was decided to take this up later.
- Asian MMS Conference - India as a possible venue. During the recent IFToMM world congress at Taiwan, the delegates were told that the next Asian MMS is to be held in 2018 at a suitable location. India was approached and requested to consider holding the same. President, AMM contacted potential hosts and based on the interest expressed by Prof. Anantha Suresh, IISc Bangalore, it was decided to send the proposal to IFToMM with IISc as the potential host pending official confirmation from IISc.
- Secretary emphasized that members should come forward to conduct events like workshops, short term courses, Mechanism Olympiad, etc. under the aegis of AMM. AMM would support these events by providing technical and financial support (by way of travel grants to students, initial seed money, etc.)
- Since no interest / nomination for the post of president came, the Present President shall continue to be president for next two years. President emphasized that young people should come forward to serve as office bearers.
- Any other matter with the permission of the Chair. There was a suggestion to support students' travel to IFToMM events. It was agreed that within existing travel grant support this can be supported. There was a suggestion about the Scopus indexing of AMM conference proceedings for better participation. Already, AMM is pursuing with Scopus for indexing of the conference proceedings from 2003 NaCoMM. It was decided to pursue with Scopus regarding this.

The meeting ended with concluding remarks by Prof. Ghosal with a thanks to all those who made it to the meeting.

# News Report on iNaCoMM 2015

## Report on 2<sup>nd</sup> International and 17<sup>th</sup> National Conference on Machines and Mechanisms, iNaCoMM 2015

Dr. Anupam Saxena, Dr. Niraj Sinha and Dr. Shikha Prasad

Organizing Team from IIT Kanpur

The Department of Mechanical Engineering, IIT Kanpur, under the aegis of the Association for Machines and Mechanisms (AMM), and International Federation for the Promotion of Mechanism and Machine Science (IFToMM) hosted the 2<sup>nd</sup> International and 17<sup>th</sup> National Conference on Machines and Mechanisms, iNaCoMM 2015, during December 16<sup>th</sup> - 18<sup>th</sup>, 2015.

The conference broadly covered the following areas: Automotive and Vehicle Dynamics, Design and Analysis of Biomedical Devices, Dynamics and Control of Multi-body Systems, Dynamics and Vibration Analysis in Machines, Fault Diagnosis and Health Monitoring, History of Machines and Mechanisms, Mechanisms and Machines for Rural, Agricultural and Industrial Applications, Mechatronic Systems, Micro, Nano-Machines and Mechanisms, Modeling and Simulation, Rigid Body and Compliant Mechanisms: Analysis and Synthesis, Robotics, Theoretical and Computational Kinematics, and Tribology. From an initial submission of close to 230 abstracts and consequently 130 manuscripts, 72 were chosen post peer review of which 66 were presented. The latter were organized into 18 oral presentation and two poster presentation sessions.



The conference commenced with the Belgaumkar Memorial Lecture delivered by Prof. Asok Mallik on *Views From A Vibration Laboratory of Pre-Labview Era*. Thereafter, Prof. J. S. Rao gave a talk on *Evolution of Machines for Fusion Reactors*. A workshop on haptics was conducted by Prof. M. Manivannan followed by a talk by Dr. Madhusudhan Raghavan on *Novel Mechanisms for Advanced Propulsion Systems*. The Lakshminarayana Lecture on Innovative Teaching and Research in Robotics and Mechanisms was delivered by Prof. S. K. Saha.

The second and third days witnessed various paper presentations in areas of Biomedical Engineering, Compliant Mechanisms, Dynamics, Kinematics and Mechanisms, Modeling and Simulation, Robotics and Tribology. Student Mechanism Design Contest was also held on the 18th of December, 2015.



The awards committee comprising of Professors Ashitava Ghosal, Anurag Purwar, G. S. Saravana Kumar, A. Narayana Reddy, and Shikha Prasad adjudged iNaCoMM2015-184, “Design of a static balancing mechanism for coordinated motion of an external load,” as the best paper under the student category, and iNaCoMM2015-73, “A Generalized Method to Investigate the Bistability of Curved Beams using Buckling Analysis” as the best paper under the general category. Special mention was given to iNaCoMM2015-148, “Optimization of High Voltage Circuit Breaker Mechanism Design using Six Sigma Methodologies.” The best student design, adjudged by Professor S. K. Saha, C. Amarnath and Dr. R. K. Jain was awarded to iNaCoMM2015-SMDC11, “Design and Fabrication of a Variable Pitch Vertical Axis Wind Turbine” by Yonas Gebre Beka.

The conference proceedings containing full papers that were presented in the conference shall be made available from AMM website (<http://www.ammindia.org>).

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# News Report on 2015 IFToMM World Congress

## Brief Report of 2015 IFToMM World Congress Held at Taipei, Taiwan on October 25-30, 2015\*

### Registration

From India 8 members and 4 students registered. The total registration in the conference was 677 out of which 453 members, 3 non members, 173 students, 1 non member student and 47 accompanied persons registered.

### Actual Attendance

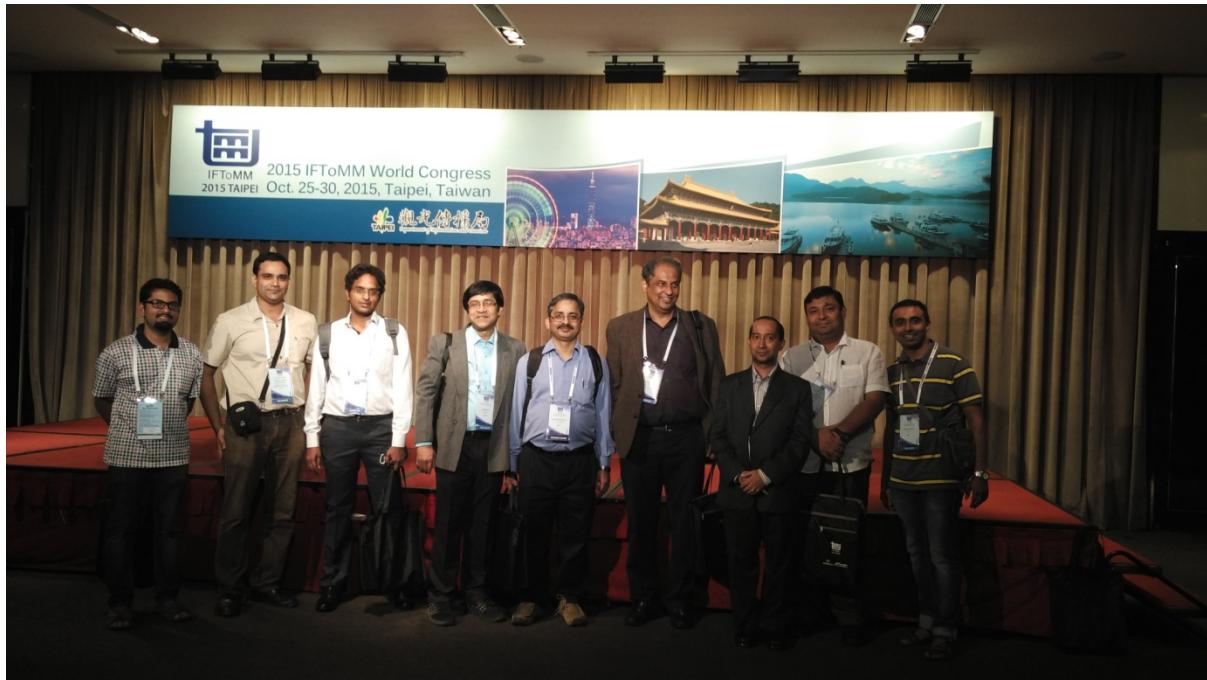
From India 7 members and 4 students participated. The total participation in the conference was 605 out of which 419 members, 2 non members, 142 students, and 42 accompanied persons participated.

### Paper Submission

Total 610 papers were submitted. Out of which 19 papers were submitted from India. The countries with submissions more than India were China-160, Taiwan-127, Japan-34, Romania-28, Russia-26, Germany-24 and Italy -22.

**Finally 14 papers were presented from India out of total 522 presentations.**

Prof. Ashitava Ghosal, Vice President AMM was elected as IFToMM Executive Council Member for the term 2016-19.



Participants from India 2015 IFToMM World Congress

### Participants from India

3. Subir K. Saha, Indian Institute of Technology Delhi, India
4. Pushparaj Mani Pathak, Indian Institute of Technology Roorkee, India
5. Anirban Guha, Indian Institute of Technology Bombay, India
6. Sandipan Bandyopadhyay, Indian Institute of Technology Madras, India
7. Rajeevlochana G. Chittawadigi, Amrita Vishwa Vidyapeetham, India
8. K. P. Ashwin, Indian Institute of Science, India (student)
9. Rama Krishna K, Indian Institute of Science, India (student)
10. Midhun S Menon, Indian Institute of Science, India (student)

\* compiled from <http://www.ifomm2015.tw/>

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# Forthcoming Events



## INTERNATIONAL FEDERATION FOR THE PROMOTION OF MECHANISM AND MACHINE SCIENCE

GEORGIAN COMMITTEE OF IFToMM  
"Mechanics 2016" International Conference  
June 23-25, 2016, Tbilisi, Georgia  
<http://www.gcifomm.org.ge>

Dear colleagues

International Federation for the promotion of machines and mechanisms science (IFToMM) and Georgian Committee of IFToMM with the assistance and support of Georgian Technical University, Institute of Machines Mechanics, Georgian Aviation University, Ak. Tsereteli State University, Kutaisi National University and Georgian Engineering Academy will held on June 23-25, 2016 in Tbilisi, Georgia, an International Scientific Conference "Mechanics 2016".

The conference will be held in accordance with the Resolution of the International Scientific Conference "Mechanics 2014" (19-21 June 2014) that was organized under the patronage of IFToMM, Georgian Committee of IFToMM, Georgian Technical University and Institute of Machines Mechanics.

We are honored to invite you to participate in the conference.

**Under the patronage**  
of International Federation for the Promotion  
of Mechanism and Machine Science,  
Georgian Technical University,  
Institute of Machines Mechanics,  
Georgian Aviation University,  
Georgian Engineering Academy.

**Organizing Committee**  
Chairman - Nodar Davitashvili - Chairman  
of Georgian Committee of IFToMM.  
Co-chairman:  
Archil Prangishvili - Rector of Georgian  
Technical University,  
Tamaz Natrashvili - Director of Institute of  
Machines Mechanics,  
Sergo Tepnadze - Rector of Georgian  
Aviation University,  
Merab Iremadze - Vice-rector of Ak. Tsereteli  
State University,  
Amiran Aptsiauri - Rector of Kutaisi National  
University.  
Technical Program chair: Otar Gelashvili  
Dean of Faculty of Transportation and  
Mechanical Engineering of GTU  
Secretary General - Gela Kipiani

**International Scientific Committee**  
R. Alizade (Azerbaijan)  
V. Algin (Belarus)  
V. Bakhshev (Azerbaijan)  
V. Glazunov (Russia)  
M. Gouttefarde (France)  
G. Danieli (Italy)  
M. John D. Hayes (Canada)  
Ion Visa (Romania)  
S. Joldasbekov (Kazakhstan)  
O. Khus (Poland)  
S. Poddubko (Belarus)  
Y. Sarkissyan (Armenia)  
Sh. H. Chang (China-Taipei)  
M. Ceccarelli (Italy)  
K. Zimmermann (Germany)

**Local organizing committee**  
V. Abashvili (Georgia)  
V. Gogilashvili (Georgia)  
R. Makharobidze (Georgia)  
T. Mchedlishvili (Georgia)  
E. Medzmarishvili (Georgia)  
T. Nadiradze (Georgia)  
T. Natrashvili (Georgia)  
D. Tavkhelidze (Georgia)  
R. Turmanidze (Georgia)  
A. Sharvashidze (Georgia)  
M. Tsikarishvili (Georgia)

**Topics of the conference**

- ◆ General Mechanics
- ◆ Applied Mechanics
- ◆ Hydroaeromechanics
- ◆ Mechanics of aircrafts
- ◆ Mechanics of rigid deformed body
- ◆ Mechanics of technological machines
- ◆ Mechanics of transportation machinery
- ◆ Mixed problems of mechanics
- ◆ Economics and mechanics of engineering
- ◆ History of Mechanics

**Presentation and proceedings**  
The working languages of Conference are:  
English, Russian and Georgian.  
Official language for drawing the papers is  
English.  
**Paper submission, presentation and publication**  
All papers will be considered and reviewed.  
Authors are requested to submit a full paper  
up to 6-10 and would be drawn up in  
accordance with requirements of  
<http://www.iftomm.org/journals> or  
<http://www.pam.edu.ge> "For authors".

**Deadlines**  
Application submission **February 20, 2016**  
Full paper submission **March 14, 2016**  
Registration fee: **May 2, 2016**  
Registration: **June, 22-23, 2016**  
Conference work **June 23-25, 2016**

Accepted and positively evaluated by  
organizational committee of conference  
reports in case of registration fee payment will  
be published in Proceedings of Mechanics  
2016

Abstracts and full papers should be submitted  
through the Conference to e-mail address:  
[mechanics2016@gcifomm.org.ge](mailto:mechanics2016@gcifomm.org.ge)

**Registration**  
The registration fee makes US \$ 350  
The registration fee includes:

- expenses on conference technical support;
- Coffee break, banquet, cultural program for participants;
- Kits for participants;
- Publication of a special scientific issue a;

Mail service (including the postage for foreign participants to send of scientific issue)

At payment of registration fee the author  
(authors) receives a single Proceedings.

Transportation, meals and accommodation at  
the expense of participants

The payment will be transfer till to **May 2,**  
**2016** on account

INTERMEDIARY: HSBC BANK USA

SWIFT: MRRMDUS 33

TBC BANK'S CORRESPONDENT

ACCOUNT: # 000-305022

BENEFICIARY'S BANK: HEAD OFFICE

SWIFT: TBCBGE 22

VAKHE BRANCH OF JSC TBC BANK  
11, CAVCHAVADZE Av., TBILISI,

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SWIFT: TBCB GE 22830

BEN'S ACCOUNT:

GE20TB060000075070147

NAME OF BENEFICIARY "GEORGIAN  
COMMITTEE OF THE INTERNATIONAL  
FEDERATION FOR THE THEORY OF  
MACHINES & MECHANISMS"

Destination: International Conference

"Mechanics-2016" registration fee

### Conference location

Tbilisi is the capital and the largest city of Georgia, lying on the banks of the Mtvari River with a population of roughly 1.5 million inhabitants. Founded in the 5th century by the monarch of Georgia's Vakhtang Gorgasali, Tbilisi has served, with various intervals, as Georgia's capital for more than a thousand years. <http://en.wikipedia.org/wiki/Tbilisi>  
Tbilisi International Airport is located on distance of 25 km from Tbilisi

### Accommodation

We recommend the two hotels "Leville"  
(daily 40-80 US \$) and "Iiani" (daily 80-130  
US \$), located in adjacent of GTU.

Also is possible to make room booking on  
arbitrary Tbilisi hotels

<http://www.hotels.com.ge/?lan=>

### Secretariat

For any specific information please use the  
e-mail address  
[mechanics2016@gcifomm.org.ge](mailto:mechanics2016@gcifomm.org.ge)  
or make call +995 555 372583 Malkhaz  
Nikoladze

## Forthcoming Events

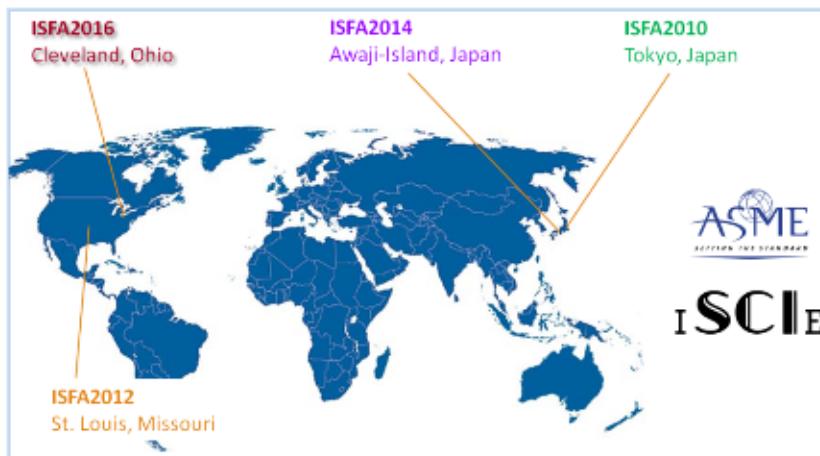
### 2016 International Symposium on Flexible Automation (ISFA 2016)

□ August 1 - 3, 2016 □ Cleveland, Ohio

Hosted by Case Western Reserve University

(<http://engineering.case.edu/conference/ISFA2016>)

A warm "welcome" from the Case Western Reserve University (CWRU) to you to join us in the **2016 International Symposium on Flexible Automation**, to be held during August 1–3, 2016 at the InterContinental Hotel near the CWRU campus in Cleveland, Ohio.



The **ISFA** conference was initiated in 1986 under co-sponsorship of the American Society of Mechanical Engineers (ASME) and the Institute of Systems, Control and Information Engineers (ISCIE) in Japan. Since then, the Symposium has been held every two years, and the title "Flexible Automation" was selected as a general term to describe automation technologies that are essential to meeting the increasing requirements of modern manufacturing and other related fields, such as dynamical systems, robotics, logistics, biomedical systems, and health care systems. While many of these requirements such as flexibility, artificial intelligence, mechatronics, 3D design and modeling, lead time reduction, and lean manufacturing, were identified over more than three decades ago, they still pose challenges and continue to motivate research in the field. In addition, newly emerged ideas and technologies, such as unmanned vehicle control, Internet of Things (IoT), cloud computing and manufacturing, additive manufacturing, image processing and pattern recognition, cyber-physical systems, security, and environmental sustainability present both new challenges and opportunities that broaden the scope of research and impact the continued advancement of flexible automation.

The theme of the **ISFA** 2016 conference is "**Flexible Automation: Smart and Connected**" and aims to inspire research on energy-efficient and intelligent automation, enhanced by the cloud infrastructure.

#### Conference Programs

Below is a list of Call for Papers (CFPs) for technical sessions to which paper submissions

- Session on Metal Cutting and Machine Tools
- Session on Digital Design and Manufacturing
- Session on Flexible and Reconfigurable Manufacturing Systems
- Session on Flexible Automation in Manufacturing Systems
- Session on Industrial Robotics
- Session on Manufacturing Controls and Machine Automation
- Session on Mechatronics and Precision Manufacturing
- Session on Manufacturing Process Control
- Session on Methods and Systems of Tribology Diagnostics and Monitoring
- Session on Metrology for Manufacturing
- Session on Nanomanufacturing and Nanoinformatics
- Session on Precision Manufacturing
- Session on Sensing and Information Extraction
- Session on Smart and Sustainable Manufacturing
- Session on Smart Manufacturing
- Session on Virtual Augmented and Mixed Reality
- Other Topics

## **Important Dates**

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- **February 12, 2016** Submission of manuscript via conference website
- **April 29, 2016** Notification of paper review results
- **June 3, 2016** Submission of revised manuscript and registration of presenting author

## **Paper Submission**

We encourage you to submit a high-quality manuscript to the 2016 ISFA. Both theoretical and applied papers from the academic, industrial, and government sectors are welcome. Submission can be in the form of long paper (8 pages maximum) or short paper (4 pages maximum). Only long papers are eligible for consideration of the Best Paper Awards.

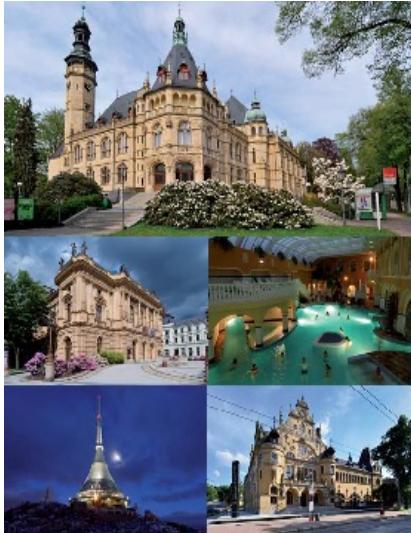
Please submit your paper(s) through **PaperCept** by the specific deadline to one of the 17 organized sessions. If you feel your paper does not fit into any of these organized sessions, submit to the Session entitled "Other Topics."

The official language of the conference is English. To submit a paper, you must first register a **PIN**. Papers must be uploaded as PDF files that conform to the conference paper format as illustrated in the **Paper Template** in Microsoft Word. Note that the maximum file size is 6 MB.

At least one author must register for the 2016 ISFA before the final manuscript can be uploaded. A single author can upload a maximum of two papers. Authors of accepted papers are expected to attend the 2016 ISFA and present their work. If you have any questions, please contact:

Dr. Robert G. Landers, Program Chair, [landersr@mst.edu](mailto:landersr@mst.edu)  
Dr. Keiichi Shirase, Program Co-Chair, [shirase@mech.kobe-u.ac.jp](mailto:shirase@mech.kobe-u.ac.jp)

# Forthcoming Events



TECHNICAL UNIVERSITY OF LIBEREC  
Faculty of Mechanical Engineering ■



## History of Liberec

Its history goes back to the time when trade routes to Germany and Poland led through the location. As traders found crossing Ještědský hřeben too hard, it was necessary to set up a resting place. At that time Liberec used to be an open market village. The first notes on a town date back to 1352. In the first half of the 16th century it gradually changed into a vassal town. Liberec used to be the second biggest town in Bohemia. There were 3 consulates, 50 textile factories and 60 metalworking factories. Nowadays Liberec offers various tourist attractions. The city boasts of numerous important buildings, such as the City Hall, F. X. Šaldy Theatre, Museum of Northern Bohemia, Ještěd Viewing Tower, Babylon Leisure Centre and other cultural and historical sights. Liberec is also an ideal place for walks or hiking tours in its environs or in the Jizerské hory. Liberec is less than 1 hour from Prague...

## Address of Organizing Committee

Technical University of Liberec  
Department of Textile Machine Design  
Studentská 2  
461 17 Liberec, Czech Republic

Telephone: +420 48 535 3173  
Fax: +420 48 535 3514  
E-mail: TMM.2016@tul.cz

[www.tmm-conf.org](http://www.tmm-conf.org)



## XII. International Conference on the Theory of Machines and Mechanisms

September 6–8, 2016  
Liberec, Czech Republic



The International Federation  
for the Theory of Machines  
and Mechanisms

## Collaboration:

The conference is organized under the patronage of:



Czech Technical University in Prague



Brno University of Technology



VUT Brno, Faculty of Mechanical Engineering

## Scientific Steering Committee

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## Important Dates:

March 7, 2016  
Registration deadline of abstracts

March 9, 2016  
Notification of acceptance of abstracts to authors

April 13, 2016  
Deadline for submission of full length and short papers

May 9, 2016  
Notification of review results and acceptance of papers

May 21, 2016  
Deadline for submission of full length and short papers

## Publication

Each paper will be reviewed and accepted papers will be published in a book or in electronic form in a Springer book series. Manuscripts and material to be submitted to the conference "Mechanisms and Mechanisms of Motion" can be sent to the e-mail address [TMM.2016@tul.cz](mailto:TMM.2016@tul.cz). Papers can be found in the database of conference proceedings, citation index on Web of Science, the programme menu [www.tul.cz](http://www.tul.cz) or in the database of scientific journals.

## The Conference Fee

Participants 400 Kč  
Students 300 Kč

The conference fee includes one copy of book of proceedings, coffee break, conference banquet, lunches, social programme, basic costs and administrative charges.

Accompanying Person 125 Kč  
The conference fee includes coffee break, conference banquet, lunches and social programme.

## General Information

By accreditation from the Czech National Committee IFToMM, the Technical University of Liberec organizes the XII. International Conference on the Theory of Machines and Mechanisms. The conference which is held every four years, continues its long standing tradition since 1973 to be organized at the Technical University of Liberec in the Czech Republic.

The Organizing Committee aims at bringing together specialists working on issues related to the theory of machines and mechanisms from a general as well as a precise application point of view.



## Topics of the Conference

Papers classified by the scientific steering committee will be presented in parallel sessions relevant to the following topics:

- control theory of mechanisms and mechanisms
- analysis and optimization of power and spatial mechanisms
- synthesis of mechanisms and mechanisms
- design and care
- computer-aided mechanisms
- robot dynamics
- kinematics
- mechanisms
- vibration and noise in mechanisms
- capital value of a mechanism and mechanisms
- control and monitoring systems for mechanisms
- accuracy and reliability of mechanisms and mechanisms
- research and applications
- the mechanisms of life in mechanics

selected researches on metal and textile industry in Liberec

## Accompanying Events:

- meeting of the mechanical committee for mechanical mechanisms or in Brno
- meeting of the Czech national committee of IFToMM
- course on introduction to usage analysis

## Social Programme:

- conference dinner
- cultural programme
- excursion

All conference participants or relatives, the accepted papers will be published in the book or in electronic form. Contributions from previous conference are included in the Springer book series "Mechanisms and Mechanisms of Motion". All papers in electronic form, including photographs or graphics, will be available in the Internet in 2016. It can be found in the database of conference proceedings, citation index on Web of Science, the programme menu [www.tul.cz](http://www.tul.cz) or in the database of scientific journals.

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## Forthcoming Events



### MTM & Robotics 2016

The Joint International Conference of

the XIII International Conference on Mechanisms and Mechanical Transmissions (MTM)

and the International Conference on Robotics (Robotics'16)

Aachen, Germany, October 26<sup>th</sup> -27<sup>th</sup>, 2016

### Organized by

Department of Mechanism Theory and Dynamics of Machines,

RWTH Aachen University

and

University and Department of Mechatronics,

University Politehnica Timisoara (UPT)

### With support of:

IFToMM Germany

Romanian Association for Theory of Machines and Mechanisms

Robotics Society of Romania

Website: <http://www.mtm-robotics-2016.igm.rwth-aachen.de/>

### Conference Topics

We are looking for original, high-quality contributions addressing (but not limited to) the following topics:

- MTM

Mechanisms – analysis and synthesis  
Dynamics of mechanisms and machines  
Mechanical Transmissions, Biomechanics,  
Precision mechanics, Mechatronics,  
Micromechanisms and Microactuators  
Computational and Experimental Methods  
CAD in mechanism and machine design

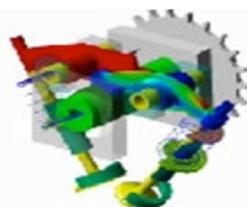
- Robotics

Mechanical design of robot architecture  
Parallel robots, Mobile robots,  
Micro and Nano robots,  
Sensors and actuators in robotics,  
Intelligent control systems  
Biomedical engineering  
Teleoperation, haptics, virtual reality

## Advertisement



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**RecurDyn**, based on multi-body dynamics, is the CAE software for multi-physics solutions. Starting with just multi-body dynamics in 2004, **RecurDyn** became the first Multi-Flexible Body Dynamics (MFBD) to integrate multi-body dynamics and non-linear finite element methods into its numerical integrator, which opened the new paradigm in the field of multi-physics CAE.

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### Editorial Board

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