



REPORT OF ANNUAL ACTIVITY from 2011 To 2012

Technical Committee for Computational Kinematics

Tokyo, 6.11.2012

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MEMBERSHIP CHANGES

TC-CK meeting at ARK Conference on 25.06.2012
in Innsbruck, Austria

New members have been nominated by different national committees:

1. Prof. Yukio Takeda

(takeda@mech.titech.ac.jp) with Department of Mechanical Sciences and Engineering, Tokyo Institute of Technology nominated as **member**

2. Assistant Prof. Sandipan Bandyopadhyay

(sandipan.bandyopadhyay@gmail.com) with Department of Engineering Design, Indian Institute of Technology-Madras, India nominated as **member**.



MEMBERSHIP CHANGES

TC-CK meeting at EUCOMES 2012 Conference
on 20.09.2012 in Santander

Nomination for new TC CK observer

Dr. Andreas Pott

(andreas.pott@ipa.fraunhofer.de), Department of Robot and Assistant Systems, Fraunhofer Institute for Manufacturing Engineering and Automation, Nobelstr. 12 70569 Stuttgart, Germany

Phone: +49-711-970-1221 Fax: +49-711-970-1008

<http://www.ipa.fraunhofer.de>

All the TC members have approved these nominations.

STATEMENT FOR THE ACTIVITY OF THE TC

The TC of Computational Kinematics seeks to foster research on Computational Kinematics, organize conferences and workshops in this field, establish national and international collaborations and especially train young scientists in methods relevant for the treatment of kinematic problems.

The basic statements are operationalized by the following activities:

- Organize conferences (two major conferences: CK every four year and ARK every even year; furthermore support local conferences)
- To update and continuously maintain the web page of the TC
- Establish national and international collaborations by visits, applying to international collaboration programs
- Organize Summer Schools



Web Page of TC CK



IFTToMM Technical Committee for Computational Kinematics

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Welcome Page

Welcome to the homepage of the IFTToMM Technical Committee for Computational Kinematics!

The Technical Committee for Computational Kinematics of the IFTToMM intends to promote the activity of the international Computational Kinematics community and to serve as a communication channel among its members.

It is considered to be the worldwide leading group of experts in Computational Kinematics and consists of specialists from different countries, which are members of IFTToMM. Each member country may have up to two representatives in the committee, entitled to vote.

Up to two researchers from the same IFTToMM Member Organization can be members of a Technical Committee. Therefore, look at the TC members list and, if the number of two has not been reached yet, contact the Chair of your IFTToMM Member Organization and ask for your nomination to the TC.

DISCUSSION OF RECENT ACTIVITIES

- New members have been nominated for approval at the EC meeting (6.11.2012).
- The TC plans to go on with the effort to promote the field of Computational Kinematics and to attract conferences under IFTToMM patronage.

MEETINGS AND VISITS

- The first TC meeting took place on 25.06.2012 during ARK 2012, Innsbruck, Austria.
- The second TC meeting took place on 20.09.2012 during EUCOMES 2012, Santander, Spain.
- Manfred Husty visited Technical University of Cluj-Napoca within the joint research project Austria-Romania (2012-2013).
- Manfred Husty visited Technical University of Cluj-Napoca as invited speaker at the Summer School on Models and Methods in Kinematics and Robotics 2012, July 01, 2012 - July 08, 2012.
- Jean-Pierre Merlet visited Technical University of Cluj-Napoca as invited speaker at the Summer School on Models and Methods in Kinematics and Robotics 2012, July 01, 2012 - July 08, 2012.
- Manfred Husty visited Chicago on August 11-12, 2012 as invited speaker during the NSF Workshop on 21st Century Kinematics at the 2012 ASME IDETC Conference in Chicago.
- Vijay Kumar visited Chicago on August 11-12, 2012 as invited speaker during the NSF Workshop on 21st Century Kinematics at the 2012 ASME IDETC Conference in Chicago.



RESEARCH JOINT COLLABORATIONS AND EXCHANGES

- Among the members of the TC CK are a lot of collaborations on an institutional or private basis. There should be some effort to channel these activities in joint project applications e.g. within European research frameworks.
- An important issue is to improve the connections between the universities and the companies through direct projects regarding implementing of the research results in the industry.
- Bilateral agreement between Austria-Romania in the field of Parallel Robots for Medical Applications - Project approved 2012-2013
- Bilateral Erasmus Academic Agreement Spain-Romania in the field of Robots with Professors and Students Mobility (2010-2014).
- Joint project between Universite Laval (C. Gosselin) and University Innsbruck approved.
- Collaboration between University Innsbruck and National Cheng Kung University (Ch. Huang) established.



CONFERENCE EVENTS

Organising the ARK 2012, Advances in Robot Kinematics, Innsbruck, Austria, June 24–28, 2012

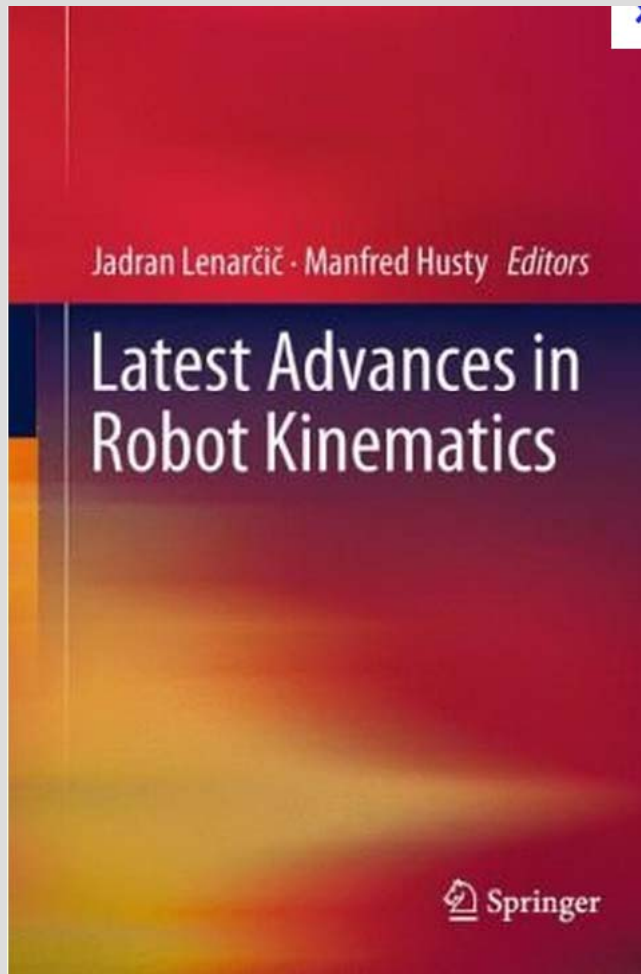
**Conference Chairmen: Manfred Husty
Jadran Lenarcic**

Many members of TC have been involved and have been active in the review process of the papers in the topics of the conference.

A lot of TC members have accepted papers within ARK and will participate there.

- 56 papers have been accepted for publication and presentation at ARK 2012
- more than 90 participants

CONFERENCE EVENTS



Latest Advances in Robot Kinematics

Lenarcic, Jadran; Husty, Manfred (Eds.)

2012, 2012, XI, 457 p.



EVENTS

Summer School on Models and Methods in Kinematics and Robotics 2012, July 01, 2012 - July 08, 2012

www.cester.utcluj.ro/mmkr.html

Chair: Doina Pislă (Romania)
Co-chairs: Manfred Husty (Austria)
Doru Talaba (Romania)

The summer school addresses to PhD, young researchers, or specialists working in robotics who want to broaden their methodological skills.

The summer school MMKR 2012 comprised the following topics:

1. Biomedical robotics rehabilitation (Lecturer: Prof. Hannes BLEULER, EPFL Lausanne, Switzerland)
2. Algebraic geometry in Robot Kinematics (Lecturer: Prof. Manfred HUSTY, Innsbruck University, Austria);
3. Brain Computer Interface for Robot planning, Haptic Prototyping (Lecturer: Prof. Doru TALABA, Transilvania University Brasov, Romania);
4. Modelling (kinematic and kinetostatic) of human joints with particular emphasis on the knee and ankle ((Lecturer: Prof. Vincenzo Parenti Castelli, University of Bologna, Italy);
5. Kinematics of wire-driven parallel robots (Lecturer: Dr. Jean-Pierre Merlet, INRIA, Sophia Antipolis, France)

45 registered participants from Austria, France, Iran, Germany, Poland, Romania, Serbia, Slovenia, Spain, Switzerland

Summer School on Models and Methods in Kinematics and Robotics 2012, Cluj-Napoca, Romania





OTHER SUPPORTED CONFERENCE EVENTS

**15th International Conference on Geometry & Graphics,
McGill University, Montreal (Quebec) Canada, 2012-08-
1...5 (Paul Zsombor-Murray)**

**NSF Workshop on 21st Century Kinematics at the 2012
ASME IDETC Conference in Chicago, August 11-12,
2012 (Michael McCarthy)**

Manfred Husty was invited speaker „Algebraic Geometry and Kinematic Synthesis”

Vijay Kumar was invited speaker „Kinematic Analysis of Cable Robotic Systems”



FUTURE PLANNED ACTIVITIES

CK 2013 Workshop in Barcelona, Spain organized by Prof. Federico Thomas –see the first proposal for the Call for papers
<http://www.iri.upc.edu/ck2013>

IAK 2013 - Second Conference on Interdisciplinary Applications of Kinematics, Lima, Peru, September 8-11, 2013, organized by Prof. Andres Kecskemethy

CK 2017 in Sousse, Tunisia organized by Prof. Lotfi Romdahne.



6th International Workshop on Computational Kinematics (CK2013) Barcelona, Spain, May 12-15, 2013

FIRST CALL FOR PAPERS AND ANNOUNCEMENT

Chair
Federico Thomas (Spain)

Co-Chair
Alba Pérez Gracia (USA)

Program Committee
Jorge Angeles (Canada)
Sandipan Bandyopadhyay (India)
Marco Ceccarelli (Italy)
Gregory Chirikjian (USA)
Jian Dai (United Kingdom)

Wang Delun (China)
Raffaele Di Gregorio (Italy)
Ulrich Döring (Germany)
Pietro Fanghella (Italy)
Clément Gosselin (Canada)
Just L. Herder (The Netherlands)
Chintien Huang (Taiwan)
Andrés Kecskeméthy (Germany)
Manfred Husty (Austria)
Jadran Lenarčič (Slovenia)
João C. Mendes Carvalho (Brazil)
Jean-Pierre Merlet (France)
Leila Notash (Canada)
Erika Ottaviano (Italy)
Vincenzo Parenti-Castelli (Italy)
Ian Parkin (Australia)
Charles Pinto (Spain)

Doina Liana Pîslă (Romania)
José María Rico (Mexico)
Lotfi Romdhane (Tunisia)
Joseph Rooney (United Kingdom)
Jon M. Selig (United Kingdom)
Moshe Shoham (Israel)
Jaromír Švígler (Czech Republic)
Yukio Takeda (Japan)
Tanio Tanev (Bulgaria)
Volker van der Wijk (The Netherlands)
Philippe Wenger (France)

For further information visit:
<http://www.in.upc.edu/ck2013/>

Aims
The aim of the conference is to bring together researchers from the broad range of disciplines related to Computational Kinematics in an intimate, collegial and stimulating environment, where they can present and exchange their newest scientific results. The CK2013 Workshop is one of the activities of the IFTToMM Technical Committee for Computational Kinematics. The previous sites of this Workshop series were Schloss Dagstuhl (1993), Sophia Antipolis (1995), Seoul (2001), Cassino (2005), and Duisburg-Essen (2009).

Site
The Workshop will be held at the Universitat Politècnica de Catalunya, Barcelona, Spain. Barcelona airport is served by all major airlines including some low-cost companies.

Topics

- Kinematic design and synthesis
- Computational geometry in kinematics
- Motion analysis and synthesis
- Theory of mechanisms
- Mechanism design
- Kinematical analysis of serial and parallel robots
- Kinematical issues in biomechanics
- Molecular kinematics
- Kinematical motion analysis and simulation
- Geometric constraint solvers
- Deployable and tensegrity structures
- Robot motion planning
- Applications of computational kinematics
- Education in computational kinematics
- Theoretical foundations of kinematics

Social programme
Barcelona offers numerous exciting cultural events to its visitors together with excellent gastronomy. An excursion will be organized so that participants can come together to visit the ornate *Palau Nacional* which houses the *Museu Nacional d'Art de Catalunya*, an extensive showcase of Catalan painting and sculpture. Conference participants are invited for a banquet dinner to meet colleagues and enjoy the local hospitality.

Registration fees
Registration fees include admission to technical sessions, coffee breaks, welcome drink, banquet, cultural visit, and conference proceedings. The registration fees are:
Participants: 350€ (before April 15, 2013), 400€ (after April 15, 2013)
Students: 200€ (before April 15, 2013), 250€ (after April 15, 2013)

Submission instructions and publication information
Authors are invited to submit a full paper following the conference format. Accepted papers will be published after the workshop by Springer in an edited book.

IMPORTANT DATES

Paper submission deadline	Notification	Camera-ready deadline	Early registration deadline	Conference dates
January 27	March 10	March 31	April 15	May 12-15



Thank you very much for your
attention!