

1 Introduction

Computational kinematics (CK) is a domain which is slowly spreading in the mechanism community. We understand here under the term CK that branch of kinematics research involving intensive computation not only of the numerical type, but also of a symbolic or geometric nature. The TC on Computational Kinematics has now 17 members and is well balanced in terms of countries representation.

2 Events of 2001-2002

Outside many communications between the TC members (mainly by e-mail) the main events that must be mentioned are:

- the final launch of the electronic journal *Electronic Journal of Computational Kinematics* (EJCK), proposed by the TC.
- the launch of the Parallel Structure Initiative (PSI)

2.1 Electronic Journal of Computational Kinematics

During 1998 a large discussion takes place among the members of the TC and in the community at large about the opportunity to propose an electronic journal on Computational Kinematics. This idea was proposed by the Chairman as one of the main objectives of the TC. Although it is quite innovative in MMT, such type of journal is nowadays quite accepted in other communities (for example in astronomy or artificial intelligence) where electronic journals are now completely accepted as reference journals.

Creating an electronic journal was motivated by three main reasons:

- the time gap between the submission of a paper and its publication in classical journals (although the IFTOMM journal has a pretty good record in this field)
- the increase in the subscription prices of journals that may lead libraries to cancel subscriptions that are not deemed essential
- the fact that the computer is a natural media for computational kinematics offering large possibilities like animation, software exchanges and fair comparison between algorithms

The official EJCK web site is:

<http://www.inria.fr/coprin/EJCK/ECJK.html>

and the first issue has been published in May 2002. This first issue is basically constituted of almost of the papers that have been proposed for CK'2001, as it has been agreed when organizing this conference.

2.2 The Parallel Structure Initiative

Parallel structures are attracting a large interest in our field. A key issue in this topic is the problem of performance analysis and optimal design.

2.2.1 Performance analysis

As parallel structures are very complex mechanisms it is very difficult to determine what are the main performances of such machine. In many cases we will be interested in determining what is the extremal value of a performance index such as stiffness, accuracy *over the workspace of the robot*, this workspace being itself defined by constraints inequalities. Hence we have to deal with a very complex optimization problem.

2.2.2 Optimal design

The performances of parallel structures are heavily dependent upon its dimensioning. Hence determining the optimal dimensioning of such structure for a given class of tasks is crucial. As performance analysis is already a difficult task it is clear that optimal design is really a tough problem.

2.2.3 The Initiative

The objectives of the proposal is to create a simulation system that allow for

- performances analysis
- optimal design

that is *generic*, i.e. that will work for:

- any parallel structure
- any type of performance index

This is a very ambitious goal that can be (at least partially) reached only through a collaborative work between mathematicians, researchers in mechanism theory, companies involved in parallel structures, end-users...

The purpose of this proposal is to organize this collaborative work within the TC. The web site of this proposal is:

<http://www-sop.inria.fr/coprin/EJCK/PSI.html>

2.3 Conference Advances in Robot Kinematics

This conference sponsored by the TC has been held from June 24 to June 28 in Caldea de Malavella (Spain) and has been superbly organized by the Institute of Robotics from Barcelona. Approximately 70 attendees have followed this single-track conference. As usual high quality papers have been presented in this conference, which is one of the best and the most attractive in this domain.

2.4 European "Expression of interests"

The European Community has recently launched a call for "Expression of interests" in order to get a feedback from the research community at large for the preparation of the launch of the 6th Framework Program. Over 15 000 "Expression of interests" has been received by the European Community and the TC has noticed with great satisfaction that many of them were strongly related to kinematics and were involving many members of our community. The TC hopes that such show of interest in our field will motivate the EC to incorporate in the call for proposal of the 6th FP more thematic priorities related to mechanisms and machines. The TC also suggests that IFTOMM send a formal letter to the representatives of the EC in charge of the FP to support a stronger involvement of the EC in the field of Mechanisms and Machines Theory.

2.5 News from the members

It is with a profound sadness that we have been informed of the death of our colleagues Joseph Duffy from University of Florida and Claude Reboulet from CERT-DERA. Both of them were deeply involved in kinematics and have offered a pioneering work in this field, the first one in general kinematics and the second one more specifically for parallel structures. As it is expected that our american colleagues will organize various events in the memory of Joseph Duffy, the Committee has decided to rename the EJCK best paper award as the Claude Reboulet/EJCK best paper award.