



FINAL STARDUST CONFERENCE SYMPOSIUM

Title of the Symposium: Mathematical formulations for orbit determination and modelling

Important advances in the area of orbital mechanics can be obtained by the adoption of novel mathematical formulations and techniques to describe and study the orbital motion and the geometry of orbits.

A few examples include the use of alternative reference/coordinate systems for state parametrization, the employment of regularization/linearization techniques to improve propagation speed and to deal with close approaches, the use of polynomial equations related to conservation laws to compute preliminary orbits, the use of variation of parameters and perturbation techniques to obtain semi-analytical solutions.

In the area of asteroid and space debris, there is a strong need for computationally efficient methods for the determination and propagation of orbits as well as for the prediction of future close encounters and collisions. This is especially evident when considering the very rapid increase in the number of observations available for these objects and the need to process them in a reasonable time span. Often, the introduction of advanced mathematical models and tools is a promising approach to deal with these challenges.

This mini-symposium will be focused on the following main research topics:

- * Novel mathematical formulations and methods to propagate orbits
- * Mathematical methods to deal with close encounters
- * Angles-only initial orbit determination for asteroids
- * Initial orbit determination for space debris with angles-only and/or radar observations
- * Mutual geometry of Keplerian orbits, evolution of the MOID and its uncertainty
- * Collision prediction for space debris
- * Definition of a priority list for follow up of hazardous asteroids

Presentations related to the above topics are encouraged.

Important dates:

- 31st July 2016: Paper submissions
- 31st Oct – 4th Nov 2016: The Final Stardust Conference
- 31st Oct & 1st Nov 2016: Mini-Symposium on Mathematical formulations for orbit determination and modeling

Virtual attendance:

Given the global nature of the asteroid and debris threat, institutions outside Europe can join in virtually through internet media. Please contact the organizers at stardust@strath.ac.uk regarding the availability and functionality of this arrangement.

Proceedings:

Accepted papers will be included in a book of proceedings to be published after the conference. Moreover, we are negotiating journal special issues to publish a selected set of paper. Note that in this case the papers will be subject to the usual revision process, and thus publication is not guaranteed.

Registration:

- All conference attendees must register and pay the corresponding registration fee.
- For each accepted paper at least one registration as presenting author is required.
- The presenting author must register to ensure the inclusion of the paper in the Proceedings.
- Details on the registration, including costs and deadlines, will be available soon.

Info and Contacts:

Updated information can be found on Stardust website.

The organisers can be reached at stardust@strath.ac.uk

Symposium organisers:

Claudio Bombardelli (UPM), Giovanni F. Gronchi (UniPi)

Conference organisers:

Massimiliano Vasile, Edmondo Minisci, Peter McGinty (University of Strathclyde), Leopold Summerer (ESA-ESTEC)