

5th ICATT

International Conference on Astrodynamics Tools and Techniques

"Astrodynamics at the fingertips"



*ESTEC/ESA, The Netherlands
29 May - 1 June 2012*

Introduction

The 5th International Conference on Astrodynamics Tools and Techniques (ICATT) is an event organized by the European Space Agency (ESA) with the collaboration of the National Aeronautics and Space Administration (NASA), the Japan Aerospace Exploration Agency (JAXA), the Deutsches Zentrum für Luft und Raumfahrt (DLR), the Centre National d'Études Spatiales (CNES), and the Agenzia Spaziale Italiana (ASI).

ICATT aims at providing agencies, companies, organizations, universities, and institutes with a forum of excellence in the area of astrodynamics and space flight mechanics. Participants are invited to showcase their latest tools and techniques so as to promote the creation and exchange of ideas and the identification of new trends and required developments.

In addition to the latest theoretical advances in the field of astrodynamics, ICATT is especially devoted to astrodynamics software tools. Demonstrations and short tutorials are welcome.

Tracks

1. Ascent Tools and Techniques

Ascent trajectories for expendable and reusable launch vehicles; computation of payload injection and deployment from balloons, aircraft, and ships

2. Earth Orbit Design and Maintenance

LEO, MEO, HEO, GEO; station-keeping; optimization of manoeuvres; computation of drag-free orbits

3. Interplanetary Flight and Non-Earth Orbits Tools and Techniques

Rendezvous with asteroids and comets; libration point transfers and orbits; resonant orbits; near-Earth objects; sample return missions; coverage

4. Satellite Constellations , Formation Flying and Rendezvous and Docking

Computation of trajectories where two or more spacecraft are involved; relative motion; computation of placement and replacement of satellites; launch analysis of formations and constellations. Computation of optimal phasing conditions; docking and mating; contact dynamics

5. Low Thrust Tools and Techniques

Computation, tools and technique involving low thrust orbits in any given mission arc

6. Re-Entry and Aero-Assisted Maneuvers

Computation of planetary re-entry trajectories; optimal guidance; skipped and bounced trajectories; aerocapture, aerobraking, and aerogravity assist maneuvers

7. Optimization and Dynamics, Multidisciplinary Design Optimization

Trajectory design and optimization; multi-objective multi-disciplinary optimization; local and global optimization techniques; stability; dynamic systems theory; dynamical models; space flight mechanics. Recent MDO methods and tools; multidisciplinary design and analysis; concurrent design

tools; rapid prototyping tools and techniques

8. Environment Modelling Tools and Techniques

Gravity models; atmospheric models; magnetic models; solar radiation and solar wind pressure models; perturbations

9. Safety and Awareness Tools and Techniques

Nature friendly techniques; safe trajectories; disposal and recycling; sustainability

10. Orbit and Attitude Determination, Estimation and Prediction

Position and velocity prediction, ephemeris computations, conjunctions, attitude determination and prediction; estimation techniques and tools

11. Verification and Validation Tools and Techniques

Methods to verify and validate tools, techniques, orbits, and models

12. Orbit and Attitude Control Tools

Tools and techniques to compute control forces and torques of space vehicles

13. Open Source Tools

Tools using any open source license; uses and perspectives of open source in space applications

14. Student session

Work of undergraduate or recently graduated students. This tracks intends to encourage students and trainees to share results from their projects

Abstract Submission

Papers will be selected on the basis of one-page abstracts (300-500 words). Abstracts should contain the following information:

- Title of paper
- Authors full name and affiliations
- Name, address, e-mail, telephone of the main author
- Proposed topic for the paper
- Presentation preference (oral or poster)

The abstract submission deadline is **2 April 2012.**

Abstracts can be submitted through the online submission form available [here](#).

For changes to your abstract after submission, please use your personal login and password to access the following [page](#).

Authors will be notified of the decision of the Committees by 15 April 2012. Upon notification of acceptance, authors will be obliged to submit a full paper by 1 May 2012.