

SPACE EDUCATION AND OUTREACH SYMPOSIUM (E1)

Lift Off - Secondary Space Education (2)

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CELESTIAL MECHANICS AND ASTRODYNAMICS WORKSHOP FOR HIGH-SCHOOL STUDENTS:
AN ITALIAN EXPERIENCE

Abstract

In the Italian high-schools the space is not a central argument: usually a student learn a little bit of astronomy in general courses of science, and, if the school is a scientific-oriented one, a student studies the law of gravitation with some astrodynamics application in the course of Physics.

Every year the Department of Mathematics of the University of Pisa organizes an open week for high school students interested in mathematics and applications: several workshops on various themes are arranged by professors with the help of undergraduate students. In the last edition I held for a first time a workshop entitled "From the Newton's apple to the space age: the mathematics in orbit", in which I talked about the historical and conceptual development of celestial mechanics and astrodynamics, arriving to describe some research arguments, such as impact monitoring of near-Earth asteroids and orbit determination and correlation of space debris. Of course the workshop has been extremely interactive, leaving time to students to discuss and to try to solve exercises.

In this presentation I would like to share this experience highlighting the educational methodologies used and the students' response, also discussing some ideas for future workshops of this kind.