



Alessio Del Vigna

Curriculum Vitæ

Education

- 2014–Present **Ph.D student**
Department of Mathematics (University of Pisa)
- Description Theory of orbit determination. Impact monitoring for NEAs. Short arc orbit determination and imminent impactors. Öpik–Valsecchi theory of close encounters and its applications. Chaotic orbit determination
- 2011–2014 **Master's Degree in Mathematics**
Department of Mathematics (University of Pisa), 110 cum laude
- Title *La missione BepiColombo: l'esperienza di relatività*
- Supervisors Prof. Andrea Milani & Dr. Giacomo Tommei
- Keywords Orbit determination for Radio-Science experiments, Space mission design, Theory of General Relativity
- 2008–2011 **Bachelor Degree in Mathematics**
Department of Mathematics (University of Pisa), 110 cum laude
- Title *Funzioni simmetriche e rappresentazioni del gruppo simmetrico \mathfrak{S}_n*
- Supervisors Prof. Giovanni Gaiffi
- Keywords Algebra, Theory of groups, Symmetric group, Representation theory, Representations of groups
- 2003 – 2008 **Scientific High School Degree**
Liceo Scientifico Tecnologico E. Fermi (LU), 100
- Title *La teoria di Cantor e il contesto culturale di inizio Novecento*

Work experience

Dec. **Researcher**

2014–Present *Space Dynamics Services* – Via Mario Giuntini 63, Cascina (PI)

Involved in the following main projects:

- **P2-NEO-II – Improved NEO Data Processing Capabilities.** Development (inside the OrbFit software) of the code concerning the following parts:
 - Non-gravitational perturbations: Yarkovsky effect, direct solar radiation pressure, symmetric and asymmetric outgassing models
 - New method for the Line of Variations sampling, uniform in probability
 - Computation of the impact corridor of asteroids with the Earth and determination of the fly-by area
- **P2-NEO-VII – Impact Monitoring and Orbital Evolution Capability for NEO Coordination Centre (Phase I).** The project consists in the migration of the Orbit Determination functionalities of NEODyS/AstDyS at the ESA/Esrin NEO Coordination Centre
- Maintenance of the NEODyS service, which is provided by the University of Pisa with the collaboration of SpaceDyS
- Administration of the imminent impactors service, still under research and development

Sep. 2013–Present **Lecturer**

University of Pisa

Teaching activities as a winner of various announcements issued by the University of Pisa:

- Courses for the preparation of the entry tests of the Agricultural Sciences Department (sep. 2013, and sep. 2014)
- Lessons, exercises, and exams for the course of *General Mathematics* at the Department of Agricultural Sciences, Pisa (Sep. 2013–Present). Form teacher: Prof. Giuseppe Puglisi (Dep. of Mathematics, Pisa)
- Practice exercises for the course of *Linear Algebra* at the Department of Biomedical Engineering (July 2016–Sep. 2016). Form teacher: Prof. Ekaterina Pervova
- Practice exercises for the course of *Geometry 1* at the Department of Physics (Oct. 2016). Form teacher: Prof. Mario Salvetti (Dep. of Mathematics, Pisa)
- Exams for the courses *Mathematical Analysis* (Dep. of Chemistry) and *Mathematical Analysis II* (Dep. of Engineering). Form teacher: Prof. Mauro Sasseti (Dep. of Mathematics, Pisa).

Computer skills

Op. Systems Windows, Linux, Mac OS

MS Office Word, Excel, Access, Power Point, Outlook

Programming FORTRAN, Perl, Bash, Visual Basic, C++, HTML

Scientific SW \LaTeX , MATLAB, Octave, R

Languages

Italian **Mothertongue**
English **Intermediate**
Spanish **Basic**

Con conversationally fluent
Basic words and phrases only

Personal skills

Communication skills

Excellent ability to work with other people, in positions where communication is important and situations where teamwork is essential, skills developed during education and researcher experience

Good listening skills, understanding of problems and solutions development

Sense of responsibility and inclination to innovation

Organisational and managerial skills

Strong organizational and management skills, ability to manage work independently, setting priorities and taking on responsibility, skills gained both with professional experience and education

Ability to work in stressful situations

Artistic skills

Management of a dance school, with excellent interpersonal skills gained thanks to public relations. *Dance school*: Emozione Danza, Porcari (LU)

Very good teaching skills in ballroom dance field (Standard and Latin-American), developed during the ongoing teaching experience

Personal interests

- Teaching Particular inclination for teaching mathematics and other science subjects, due to the great experience in the following situations:
- Lecturer for some courses of Mathematics at the University of Pisa (see the *Work Experience* section)
 - Lessons and seminars for the pre–courses, and during *Mathematics Week* at the Department of Mathematics of Pisa
 - Private lessons up to graduate level, for several years
- Dance Athlete and competitor registered in Italian Dance Sport Federation (FIDS), for Standard and Latin–American Dances
- Reading Divulgative book about mathematics and physics
Detective stories (Agatha Christie, above all), fantasy books (*Harry Potter* saga and *The Lord of the Rings* are my favourites), and various kind (like Dan Brown novels). The classics of literature, of various epoch and authors
- Music Classical music, also thanks to six years dedicated to piano study. Among my favourite composers: Chopin, Beethoven, Scriabin, Rachmaninoff, Liszt