

CURRICULUM VITAE of Dr. David Bancelin

EDUCATION

- 2008-2011 PhD. in astronomy and astrophysics, IMCCE, France
- 2006-2008 Master degree in fundamental physics, University Paris 7, France
- 2003-2005 Bachelor's degree in fundamental physics, University Paris 7, France

SCIENTIFIC JOBS

Jan. 2013 – present Postdoctoral Position, Institute of Astrophysics, University of Vienna, Austria
FWF-NFN project "Pathways to habitability"

Jan. – Dec. 2012 Postdoctoral position, Paris Observatory, France, subcontractor with ESA

2008 – 2011 Ph.D. in astronomy and astrophysics IMCCE, France

2005 – 2008 Training period:

Master 2 (Mar-Jun 2008, Paris obs.): Numerical simulations and code development for orbit determination

Master 1 (Jul-Aug 2006, ESPCI, Paris): Numerical simulations of a drop undergoing a vertical perturbation

Bachelor's degree (Jul 2005, APC, Collège de France, Paris): Numerical simulations of the bolometric detection chain of the Planck-HFI instrument

TEACHING

2008 – 2015 Speaker for a summer school OISA, Morocco: Teaching for Master and doctorate students on the topic *Dynamics of small bodies in the Solar System*

Tutoring for an online formation in astronomy and celestial mechanics:
general teaching in astronomy and celestial mechanics

Teaching assistant for Bachelor and Master level: data analysis for Earth science – mechanics – electrostatics – thermodynamics – hydrodynamics– acoustic and electromagnetic waves

MEMBERSHIP

since 2013 DPAC member for the Gaia mission

2013 Scientific advisor for the NEOShield project

2012 – 2014 Scientific advisor for the "Apophis Express" CNES mission

REVIEWED PUBLICATIONS

- **Bancelin, D.**, Pilat-Lohinger E., Maindl T.I., Ragossnig F., Schäfer C.: *The Influence of orbital resonances on the water transport to objects in the circumprimary habitable zone of binary star systems*, AJ, 153:269, 2017
- Galiazzi M.A., Silber E.A., **Bancelin D.**; *V-type near-Earth asteroids: Dynamics, close encounters and impacts with terrestrial planets*, AN, 338:375-384, 2017
- Bazsó A., Pilat-Lohinger E., Eggl S., Funk B., **Bancelin D.**, Rau G.: *Dynamics and habitability in circumstellar planetary systems of known binary stars*, MNRAS, 466:1555-1566, 2017
- **Bancelin D.**, Pilat-Lohinger E., Bazsó A.: *Asteroid flux towards circumprimary habitable zones in binary star systems. II. Dynamics*, A&A, 591:A120, 2016
- **Bancelin D.**, Pilat-Lohinger E., Eggl S., Maindl T.I., Schäfer C., Speith R., Dvorak R.: *Asteroid flux towards circumprimary habitable zones in binary star systems. I. Statistical Overview*, A&A, 581:A46, 2015
- Eggl S., Hestroffer D., Thuillot W., **Bancelin D.**, Cano J.-L., Cichocki F.: *Post mitigation impact risk analysis for asteroid deflection demonstration missions*, AdSpR, 56:528-548, 2015
- Thuillot W., **Bancelin D.**, Ivantsov A., Desmars J., Assafin M., Eggl S., Hestroffer, D., Rocher, P., Carry, B., David, P.: *The astrometric Gaia-FUN-SSO observation campaign of 99942 Apophis*, A&A, 583:A59, 2015
- Desmars J., **Bancelin D.**, Hestroffer D., Thuillot W.: *Statistical and Numerical Study of Asteroid Orbital Uncertainty*, A&A, 554:A32, 2013
- **Bancelin D.**, Colas F., Thuillot W., Hestroffer D., Assafin M.: *Asteroid (99942) Apophis: New predictions of Earth encounter for this PHA*, A&A, 544:A15, 2012
- **Bancelin D.**, Thuillot W., Hestroffer D.: *Dynamics of asteroids and NEOs from Gaia astrometry*, P&SS, 77:21-29, 2012
- **Bancelin D.**, Thuillot W., Hestroffer D.: *Numerical Integration of dynamical system with Lie Series*, CeMDA, 112:221-234, 2012
- Beauvalet L., Lainey V., Arlot J.-E., **Bancelin D.**, Binzel R.-P Marchis, F.: *Constraining multiple systems with GAIA*, P&SS, 73:62-65, 2012

SCIENTIFIC REPORTS

- Hestroffer D., **Bancelin D.**, Thuillot W., Zuccarelli V., *Orbit Propagation Algorithms for the Space Situational Awareness: Trade-off Study*, ESA-EMITS n° ESTEC/1-6657/NL/MH/ps, ASTOS-NEOPROP-TN-004, 2012
- Hestroffer D., **Bancelin D.**, Thuillot W., Zuccarelli V., *Orbit Propagation Algorithms for the Space Situational Awareness: New Approaches for the Computation of Orbit Propagation*, ESA-EMITS n° ESTEC/1-6657/NL/MH/ps, ASTOS-NEOPROP-TN-003, 2012

- **Bancelin D.**, Thuillot W., Hestroffer D., Zuccarelli V., *Orbit Propagation Algorithms for the Space Situational Awareness: Review and Assessment Performed*, ESA-EMITS n° ESTEC/1-6657/NL/MH/ps, ASTOS-NEOPROP-TN-001, 2012
- Desmars J., **Bancelin D.**, Hestroffer D., Thuillot W., *Asteroid Ephemerides*, ESA-EMITS/22885/09/MOS/100409-R, 2010

INVITED TALKS AND SEMINARS

- Nachts auf der Sternwarte "*An overview of the near-Earth asteroids population*", Jan. 2017, Institute of Astrophysics, Vienna, Austria
- Seminar Temps et Espace "*Asteroids impact flux and water delivery in habitable zones in binary star systems*", Mar. 2014, IMCCE, Paris, France
- Seminar ADG-EPG "*Asteroid Apophis from past, present and future observations*", May 2011, IfA, Vienna, Austria
- Colloquium ADSG "*The near-Earth asteroids*", Mar. 2011, University of Namur, Namur, Belgium
- International Symposium on Orbit Determination and Propagation "*Challenge over 2010-2020 for Orbit Determination and the Dynamics of Artificial Celestial Mechanics and Space Debris*", Sep. 2011, Lille, France
- Seminar CCT/ORB on the topic "*Les géocroiseurs où le ciel va-t-il nous tomber sur la tête?*", CNES, 2011, Toulouse, France

INVITED LECTURER

- Lecturer at the 4th Ouakaimden International School of Astrophysics on the topic "*Satellites and Small Bodies of the Solar System*", May 2013, Marrakech, Morocco

SCIENTIFIC TALKS

- **Bancelin D.**, Pilat-Lohinger E., Maindl T. I., Ragossnig F., Dvorak R., Schäfer C., *Influence of orbital resonances on the water transport towards circumprimary habitable zones in binary star systems*, 9th Humboldt Colloquium, Mar. 2017, BadHofgastein, Austria
- Pilat-Lohinger E., Bazsó Á, Funk B., **Bancelin D.**, *Eccentric planetary motion due to gravitational perturbations and the influence on the habitability*, AAS-#48DPS EPSC #11 joint, Oct. 2016, Pasadena, US
- **Bancelin D.**, Pilat-Lohinger E., Maindl T. I., Bazsó Á, *Water transport to circumprimary habitable zones from icy planetesimals disks in binary star systems*, 1st Greek-Austrian Workshop, Sep. 2016, Chalkidiki, Greece
- Funk B., Pilat-Lohinger E., Bazsó Á, **Bancelin D.**, *On the stability of the detected planet in the triple system HD 131399*, 1st Greek-Austrian Workshop, Sep. 2016, Chalkidiki, Greece

- Galiazzo M.A., Silber E. A., **Bancelin D.**, Wiegert P., Osinski G.R., *V-type NEAs: orbital Dynamics and collisional interactions with terrestrial planets*, 47th LPSC, Mar. 2016, Texas, US
- Rab C., **Bancelin D.**, Johnston C., Maindl T. I., Schäfer C., Steyrleithner P., Vorobyov E. I., *Computational astrophysics: planets, stars and galaxies*, Austrian HPC Meeting, Feb. 2016, Grundlsee, Austria
- Bazsó Á., Pilat-Lohinger E., Ettl S., Funk B., **Bancelin D.**, *Secular resonances in circumstellar systems in binary stars*, The Astrophysics of Planetary Habitability, Feb. 2016, Vienna, Austria
- Pilat-Lohinger E., Lammer H., **Bancelin D.**, Erkaev N. V., Bazsó Á., Ettl S., *The habitability of eccentric planetary orbits*, The Astrophysics of Planetary Habitability, Feb. 2016, Vienna, Austria
- **Bancelin D.**, Pilat-Lohinger E., Ettl S., Lammer H., Johnston C., Maindl T. I., Dvorak R., *Asteroid flux and water transport towards circumprimary habitable zones in binary star systems*, EPSC, Sep.-Oct. 2015, Nantes, France
- Galiazzo M. A., Silber E. A., **Bancelin D.**, Wiegert P., Osinski G. R., *V-Type NEAs: impacts and close encounters with terrestrial planets*, Bridging the Gap III: Impact Cratering In Nature, Experiments and Modeling, Sep 2015, Freiburg, Germany
- Galiazzo M. A., Silber E. A., **Bancelin D.**, Wiegert P., Osinski G. R., *V-Type NEAs: impacts and close encounters with terrestrial planets*, 2nd COSPAR Symposium, Nov. 2015, Foz de Ignacu, Brasil
- Pilat-Lohinger E., **Bancelin D.**, Bazsó Á., Ettl S., *Flux of icy asteroids towards the habitable zone in binary stars*, IAU GA, Aug. 2015, Hawaii, US
- **Bancelin D.**, Pilat-Lohinger E., Maindl T. I., Ettl S., Dvorak R., *Water transport into circumprimary habitable zones in binary star systems*, Pathways towards habitable planets, July. 2015, Bern, Switzerland
- **Bancelin D.**, Thuillot W., Ivantsov A., Desmars J., Assafin M., Ettl S., Hestroffer D., Rocher P., Carry B. and the Gaia-FUN-SSO team, *The Gaia-FUN-SSO observations campaign of Apophis: a preliminary test for the network*, Gaia-FUN-SSO workshop, Nov. 2014, Paris, France
- **Bancelin D.**, Pilat-Lohinger E., Ettl S., Dvorak R., *Water delivery to the Habitable Zone and impact probabilities in the early phases of planetary systems in binary star systems*, Star-Planet interactions and the habitable zone workshop, Nov. 2014, Saclay, France
- **Bancelin D.**, Pilat-Lohinger E., Ettl S., Dvorak R., *Water transport to the Habitable Zone and impact probabilities in the early phases of planetary systems in binary star systems*, EPSC, Sep. 2014, Estoril, Portugal
- **Hestroffer D.**, Berthier J., Carry B., David P., Thuillot W., Arlot J. E., **Bancelin D.**, Fouchard M., Ivantsov A., Kovalenko I., Lainey V., Le Poncin-Lafitte C., Tanga P., *Gaia contribution to the dynamics of Solar System Objects*, EPSC, Sep. 2014, Cascais, Portugal

- **Bancelin D.**, Pilat-Lohinger E., Eggl, S., *Impact flux of asteroids and water delivery to the habitable zone in binary star systems*, IAU Complex Symposium, Jul. 2014, Namur, Belgium
- Zuccarelli V., Yabar Valles C., Weikert S., **Bancelin D.**, Thuillot W., Hestroffer D., *NEOPROP: a NEO Propagator for Space Situational Awareness*, 6th IAASS Conference: Space Safety is Not an Option, May 2013, Montreal, Canada
- Pilat-Lohinger, E. ; Sandor, Zs. ; Eggl, S. ; **Bancelin, D.**, *An Earth with Two Suns*, Search for Life Beyond the Solar System. Exoplanets, Biosignatures & Instruments. Mar 2014, Tucson, US
- **Bancelin, D.**, Hestroffer D., Thuillot W., *Orbit Propagation of Asteroid (99942) Apophis From Recent Observations*, PDC, Apr. 2013, Flagstaff, US
- **Bancelin D.**, Pravec P., Nolan M., *Short Term Impact Risk Assessment for Asteroid 2011 AG5*, PDC, Apr. 2013, Flagstaff, US
- Perna D., Barucci M. A., **Bancelin D.**, Birlan M., Eggl S., Fornasier S., Fulchignoni M., Hestroffer D., Thuillot W., Harris A. W., Drube L., *Requirements for Mitigation Precursor Reconnaissance, a Study from the Neoshield Project*, PDC, Apr. 2013, Flagstaff, US
- Thuillot W., **Bancelin D.**, Tanga P., Hestroffer D., Berthier J., Carry B., David P., Rocher P. and the Gaia-FUN-SSO team, *The Gaia ground-based follow-up network Gaia-FUN-SSO*, PDC, Apr. 2013, Flagstaff, US
- Ivantsov A., Hestroffer D., W.Thuillot, **Bancelin D.**, *Asteroid masses with Gaia from ground and space-based observations*, EGU, Apr. 2013, Vienna, Austria
- Eggl S., Perna D., Barucci M. A., **Bancelin D.**, Birlan M., Fornasier S., Fulchignoni M., Hestroffer D., Thuillot W., Michel, P., Harris A. W., Drube L. , *NEOSHIELD: The role of asteroid multiplicity in (pre-)mitigation strategies*, Astrobiological and cosmochemical implications of Marco Polo-R sampling of a primitive asteroid, International Symposium, Jan. 2013, Barcelona, Spain
- **Bancelin D.**, Hestroffer H., Thuillot W., *Asteroid Apophis From Past, Present And Future Observations*, DPS meeting, Oct. 2012 , Reno, USA
- **Bancelin D.**, Hestroffer D., Thuillot W., *Near-Earth asteroids orbit propagation with Gaia observations*, 2nd Gaia-FUN-SSO Workshop, Sep. 2012, Paris, France
- Thuillot W., **Bancelin D.**, Desmars J., Hestroffer D., *Asteroid datamining and precoveries in the Gaia era*, NAROO-GAIA workshop, Jun. 2012, Paris, France
- **Bancelin D.**, Hestroffer H., Thuillot W., *Near-Earth asteroid astrometry and orbit propagation*, ACM, May 2012, Niigata, Japan
- Souami D., Galiazzo M., Eggl S., Souchay J., **Bancelin D.**, *The Vesta Asteroid Family: Study of the Family and Close Encounters with Terrestrial Planets (II)*, ACM, May 2012, Niigata, Japan
- **Bancelin D.**, Hestroffer D., Thuillot W., *Science alert mode for the Solar System objects with the Gaia mission*, EPSC-DPS Joint Meeting, Oct. 2011, Nantes, France

- **Bancelin D.**, Hestroffer D., Thuillot W., *Asteroid Apophis orbit from recent observations*, EPSC-DPS Joint Meeting, Oct. 2011, Nantes, France
- Desmars J., **Bancelin D.**, Hestroffer D., Thuillot W., *Recent investigations on the accuracy of asteroid ephemerides*, EPSC-DPS Joint Meeting, Oct. 2011, Nantes, France
- Thuillot W., **Bancelin D.**, Hestroffer D., *Ground-based observations in support to the Gaia mission*, Workshop on astrometry, Now and in the future, Sep. 2011, Antalya, Turkiye
- Desmars J., **Bancelin D.**, Hestroffer D., Thuillot W., *Statistics and Analysis of the Uncertainty of Asteroid Orbit*, International Conference "Astronomical Research: from Near-Earth Space to the Galaxy", NA0190, Sep. 2011, Nikolaev, Ukraine
- Ivantsov A., Hestroffer D., **Bancelin D.**, Pinigin G., Thuillot W., *Revised List of Close Encounters between Asteroids for Determining Asteroid Masses*, Workshop on astrometry, Now and in the future, Sep. 2011, Antalya, Turkiye
- **Bancelin D.**, Hestroffer D., Thuillot W., *Near-Earth Asteroids orbits from Gaia and ground based observations*, PDC, May 2011, Bucarest, Romania
- Hestroffer D., **Bancelin D.**, Thuillot W., Tanga P., *Gaia Astrometry of Near-Earth Objects*, PDC, May 2011, Bucarest, Romania
- Prado J. Y., **Bancelin D.**, Colas F., Hestroffer D., Thuillot W., *Apophis : Impact risks for the long-term*, PDC, May 2011, Bucarest, Romania
- **Bancelin D.**, Hestroffer D., Thuillot W., *Near-Earth Asteroids Astrometry with Gaia*, Solar System Science before and after Gaia, May 2011, Pisa, Italy
- **Bancelin D.**, Hestroffer D., Thuillot W., *Near-Earth Asteroids Astrometry with Gaia*, EPSC, Sep. 2010 Rome, Italy
- **Bancelin D.**, Desmars J., Thuillot W., Colas F., Hestroffer D., Assafin M., *Refinement of Apophis Orbit during 2011-2014 Period*, International Conference "Astronomical Research: from Near-Earth Space to the Galaxy" (NAO190), 2010, Nikolaev, Ukraine
- **Bancelin D.**, Hestroffer D., Thuillot W., *Near-Earth Asteroids Astrometry with Gaia and Beyond*, NAO2010, May 2010, Nikolaev, Ukraine

INTERVIEWS FOR FRENCH PRESS/RADIO/MEDIA

- Interview for the france magazine Sciences et Vie n° 1177, Oct. 2015, rubric Culture and Science, Questions/Answers: "Un séisme peut-il changer l'axe de rotation de la Terre" (Can an earthquake change the Earth's spin axis?)
- Interview for the france press media Le Monde, 22th December 2012: "Et pour la prochaine fin du monde, des astéroïdes géants heurtent la Terre" (And for the next end of the world, big asteroids hit the Earth), http://www.lemonde.fr/planete/article/2012/12/22/et-pour-la-prochaine-fin-du-monde-des-asteroides-geants-heurtent-la-terre_1809779_3244.html

- Interview for a live french radio program "Public Science" on the french radio France Culture on 26th October 2012, on the topic "Un astéroïde peut-il provoquer la fin du monde?" (Can an impact with an asteroid lead to the end of the world?),
<http://www.franceculture.fr/emissions/science-publique/un-asteroide-peut-il-provoquer-la-fin-du-monde>
- Interview for the france magazine Sciences et Vie n° 1141, in October 2012, rubric Les clés pour comprendre (Keys to understand), on the topic "Astéroïdes: pourquoi prévoir leur impact sur Terre demeure impossible" (Asteroids: why predicting impacts with the Earth remains impossible)
- Interview for the french magazine Ciel & Espace in May 2011, rubric L'Évènement on the topic "L'ombre d'Apophis s'éloigne" (The threat of Apophis vanishes),
<http://www.cieletespace.fr/node/7213>