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**FARINELLA PRIZE 2014 AWARDED TO CZECH PHYSICIST DAVID VOKROUHLICKY**

The fourth "Paolo Farinella Prize" is being awarded in 2014 to Prof David Vokrouhlicky (Charles University, Prague), a Czech dynamicist who has made major contributions to our understanding of the dynamics and physics of solar system, including how pressure from solar radiation affects the orbits of both asteroids and artificial satellites. The Prize will be presented on Monday 8th of September, during the opening ceremony of the European Planetary Science Congress (EPSC) 2014, at the Centro de Congressos do Estoril, Cascais, Portugal. The ceremony includes a public lecture by Vokrouhlicky on the topic "non gravitational forces in the Solar System".

The prize was established in 2010 to honor the memory of the Italian scientist Paolo Farinella (1953–2000) and each year, it acknowledges an outstanding researcher not older than 47 years (the age of Farinella when he passed away) who has achieved important results in one of Farinella's fields of work. Vokrouhlicky not only collaborated with Farinella as a scientist, but also co-authored with him and Bruno Bertotti "Physics of the Solar System", a textbook that stands as a comprehensive compendium of the advances in the field. Vokrouhlicky and Farinella were the first to set out a unified version of the Yarkovsky effect, a small but significant force experienced by small asteroids caused when the surface absorbs sunlight and then re-emits that energy as heat. At that time when radiation forces were seen relevant only for dust particles, Vokrouhlicky and Farinella set a new paradigm by showing that these tiny forces could drive minor bodies into the internal region of the solar system and be responsible for triggering their capture into resonances.

Before receiving the prize Vokrouhlicky commented: "I had the privilege to collaborate with many splendid scientists over the past twenty years and I certainly would achieve only a small fraction of my results without their contribution. So, undoubtedly, I feel like sharing the prize with many of them. That said, Paolo Farinella should be in the first place among them, since I owe him enormously for bringing me from other areas of astronomy to planetary science and helping me to

do the first steps in this field. So in one sense I am sad I cannot share the honor of receiving this prize with him. On the other hand, the fact that the prize holds his name is special to me. While certainly Paolo's memory continues in his work, I am also very happy that "his" prize exists and helps to recall this extraordinary scientist and gentle man to a wider community of planetary researchers and astronomers today."

## ATTACHED FILES



David Vokrouhlicky, Paolo Farinella Prize 2014 winner, at EPSC2014. Credits: EPSC 2014  
Link to image: [http://www.europlanet-eu.org/images/epsc2014/david\\_vokrouhlicky.jpg](http://www.europlanet-eu.org/images/epsc2014/david_vokrouhlicky.jpg)

## MORE ABOUT THE PAOLO FARINELLA PRIZE

The Paolo Farinella prize was established to honor the memory and the outstanding figure of Paolo Farinella (1953–2000), an extraordinary scientist and person, in recognition of significant contributions given in the fields of interest of Farinella, which span from planetary sciences to space geodesy, fundamental physics, science popularization, and security in space, weapons control and disarmament. The winner of the prize is selected each year on the basis of his/her overall research results in a chosen field, among candidates with international and interdisciplinary collaborations, not older than 47 years, the age of Farinella when he passed away, at the date of April 30, 2014. The prize has first been proposed during the "International Workshop on Paolo Farinella the scientist and the man", held in Pisa in 2010, supported by the University of Pisa and by IAPS-INAF (Rome). The first "Paolo Farinella prize" was awarded in 2011 to William Bottke, for his contribution to the field of "physics and dynamics of small solar system bodies". In 2012 the prize went to John Chambers, for his contribution to the field of "formation and early evolution of the solar system " and in 2013, to Patrick Michel, for his contribution to the field of "collisional processes in the Solar System".

## MORE ABOUT David Vokrouhlicky , 2014 WINNER

David Vokrouhlicky, (Charles University, Prague, Czech Republic) is a dynamicist who has not only made major contributions to crucial questions in the physics and dynamics of the Solar System, but has also brought forward new ideas that are now the basis for broader explorations in the field of

small bodies.

Vokrouhlicky was a close collaborator and friend of Paolo Farinella, sharing his interest in the dynamics of both artificial and natural celestial bodies, exploiting this interdisciplinary approach to enrich both disciplines. In the 90's their collaboration with the group at the Observatoire de la Cote d'Azur (CERGA) led to numerous fundamental papers dealing with how non-gravitational perturbations affect the geodetic satellite LAGEOS (solar radiation pressure and spin-orbit coupling). This spacecraft plays a key role in the realization of Earth's reference frame.

These early works on artificial space-based objects were critical in setting the stage for their papers on how non-gravitational thermal forces modify the orbits and spin states of asteroids. Their work provided dynamicists a new way to understand the migration of small bodies across the main asteroid belt and onto pathways that could take them to Earth.

More specifically, Vokrouhlicky and Farinella were pioneers in developing a new unified version of the diurnal and seasonal variants of the so-called "Yarkovsky effect", allowing them to glean new insights into the importance of thermal forces on the long term orbital evolution of small asteroids. In this era, radiation forces were most often seen as relevant only for dust particles. Their work provided the dynamics community with a new paradigm, namely that these tiny forces could drive small asteroids into planetary resonances that could deliver them onto planet-crossing orbits. Their predictions have since been confirmed by direct observations of asteroids, and today the Yarkovsky effect is a perennial hot topic. The linear Yarkovsky effect model published by Vokrouhlicky in 1999 remains one of the primary references for the subject, and his formalism has been used by other noted papers to understand the origin of near-Earth asteroids. Vokrouhlicky and his collaborators also helped to popularize so-called YORP thermal torques that strongly affect the spin vectors of asteroids. It has since been shown that YORP largely determined the spin state of small asteroids, with collisions playing a smaller role than previously suggested. Scores of papers on both the Yarkovsky and YORP effects are now published every year as the field finds new variants or applications of these forces.

The contributions of Vokrouhlicky are well known in the solar system community, with Vokrouhlicky involved with several key review papers on the Yarkovsky and YORP effect. In 2003 and 2007 Vokrouhlicky co-authored two Science papers on the first direct detection of the Yarkovsky and YORP effects, respectively, in agreement with his theoretical predictions.

His work combines the best of analytical studies and highly sophisticated theoretical models, with applications that can readily be tested against observations. This combination of skills leads to mathematically clean and elegant papers that also contain valuable physical insights. The textbook "Physics of the Solar System" that he wrote with Bruno Bertotti and Paolo Farinella, stands as a comprehensive compendium of the advances in the field and as evidence of his breadth of interests and the range of his expertise.

### **About the European Planetary Science Congress (EPSC)**

EPSC is the major European meeting on planetary science. EPSC 2014 is taking place at the "Centro de Congressos do Estoril", Cascais, Portugal, from Sunday 07 to Friday 12 September 2014, with more than 800 scientists participating from Europe and around the world and a

programme that includes 52 sessions and workshops, and more than 800 scheduled abstracts for oral presentations and posters sessions. Details of the Congress and a full schedule of scientific sessions and events can be found at the official website: <http://www.epsc2014.eu/>

EPSC 2014 is organised by Europlanet and Copernicus Meetings.

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### **About Europlanet**

Europlanet is a network of planetary scientists, whose aim is to bring together the disparate European community so that Europe can play a leading role in space exploration. Europlanet's activities complement the mission activities of the European Space Agency through field work at planetary-analogue terrains on Earth, laboratory measurements, computer modelling and observations from ground-based telescopes. Founded in 2002 and funded by the European Commission from 2005-2012, Europlanet has evolved into a community-based organisation that will carry on this work and plan for future missions and mission support.

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