

# Editoria - giugno 2019

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## Proceedings of the International School of Physics "E. Fermi" – Course 201 Nuclear Physics with Stable and Radioactive Ion Beams

Edited by *F. Gramegna, P. Van Duppen, A. Vitturi, S. Pirrone*

The volume provides a summary of the lectures presented in the beautiful venue of Villa Monastero, overlooking Lake Como. It addresses the fundamental features associated with the study of nuclear systems far from the valley of stability. Studies performed with stable beams and with radioactive ion beams are produced at first-generation facilities (ISOLDE - CERN (Switzerland), SPIRAL2 - GANIL (France), FAIR - GSI (Germany), SPES (Italy), RIBF - RIKEN (Japan), TRIUMF (Canada) and FRIB - MSU (USA)) and hint to new insight in the way nuclei are built from their constituents. By studying the properties of the so-called exotic nuclei that possess an unbalanced number of protons to number of neutrons ratio, hidden aspects of the strong and weak force acting in the nuclear medium can be uncovered. The lectures and seminars of the School focused on the structural and dynamical aspects from both a theoretical and experimental point of view, in order to provide an overview of the recent developments in this active field of research.

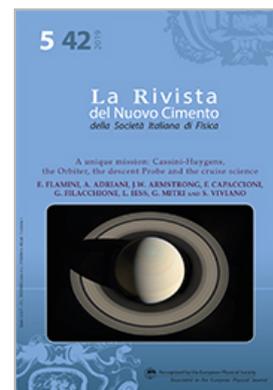


## La Rivista del Nuovo Cimento Vol. 42 N. 5 (2019)

### A unique mission: Cassini-Huygens, the Orbiter, the descent Probe and the cruise science

*E. Flamini, A. Adriani, J. W. Armstrong, F. Capaccioni, G. Filacchione, L. Iess, G. Mitri, S. Viviano*

The science return of the Cassini-Huygens mission is the yardstick for any other planetary mission. Hundreds of findings and discoveries mark the 7-year cruise phase and the 13 years of operations at Saturn. Just to cite few of them: the precise tests of General Relativity, the discovery of lakes and seas of methane and ethane on Titan, the discovery of water geysers emitted from Enceladus's south pole and the gravity measurements showing the existence of an underlying liquid water ocean, and, just before the end of the mission, the confirmation of the young age of Saturn's rings system. The extraordinary scientific success of this mission shows what an amazing unity in the diversity of many disciplines and cultures can allow to achieve. The mission has been realized by NASA in partnership with the European Space Agency and the Italian Space Agency, with a group of about 250 scientists and 5000 engineers from 19 nations, managing cross-cultural and multidisciplinary issues. The analysis of the 635 Gb of data produced during its operational life, including 403048 images, has been a challenge for the mission scientists and constitute a unique legacy for future generation of researchers. The Italian participation did significantly contribute to the Cassini-Huygens success.



This review provides a description of the subsystems and instrument with substantial Italian participation, as well as an overview of the main scientific results of the mission from the launch to the Grand Finale.

## **Il Nuovo Cimento Vol. 42 N. 1 (2019) – OPEN ACCESS**

Papers presented at the Third Meeting of the Italian Solar and Heliospheric Community, SoHe3 2018, Turin, 28-31 October 2018, edited by *A. Bemporad, S. Criscuoli, D. Del Moro, S.L. Guglielmino, S. Landi, M. Laurenza, F. Reale, T. Straus, A. Vecchio*

This volume includes the contributions presented at the Third Meeting of the Italian Solar and Heliospheric Community - SoHe3, held in Turin (Italy) on October 28-31, 2018. The purpose of this conference was to provide a forum at the national level for the discussion of the main topics of solar and heliospheric physics and space weather. The conference strengthened existing collaborations and established new ones, both in the context of projects in which part of the community is involved (such as the European Solar Telescope - EST, Solar Orbiter, Bepi Colombo, Proba-3, CSES-Limadou space missions, etc.), and beyond. The conference encouraged the participation of PhD students and young researchers to facilitate them joining the Italian community.



## **EPJ E – Highlights**

### **Electro-osmosis and flexo-electricity in the dowser texture**

*P. Pieranski, M.H. Godinho*

You may not know it, but you probably spend several hours a day looking at nematic liquid crystals; they are used in virtually every smartphone, computer and TV screen. They are liquids composed of elongated molecules, which in some situations can be oriented in a curious way termed the 'dowser texture', which is sensitive to external conditions. Physicists Pawel Pieranski of the Universite Paris-Sud, Paris, France and Maria Helena Godinho of Universidade Nova de Lisboa, Lisbon, Portugal have now published a paper in EPJ E that shows that the dowser texture responds to electric fields in different ways in different nematic materials.

In a dowser texture, a liquid crystal is squeezed between two glass plates so that the molecules closest to the plates are perpendicular to them but point in opposite directions. In the bulk, on the way from one plate to the other one, the molecules rotate 180° so that if you follow the change in their direction with a line you end up with a pointed shape resembling the Y-shaped wooden rods used by dowsers in centuries past to locate groundwater, hence the name – the dowser texture. The 'tip' of the dowser texture is free to rotate rather like a weathervane and can thus act as a sensitive probe. Its direction is sensitive to the direction of an electric field, with the tip pointing either from the positive to the negative electrode (parallel) or vice versa (antiparallel).



## **EPJ ST – Call for papers**

**EPJ ST Special Issue: Special Chaotic Systems**

Editors: *T. Kapitaniak, S. Jafari*

Articles should be submitted to the Editorial Office of EPJ ST by selecting "Special Chaotic Systems" as a special issue at this link.

Submission Deadline: 31 August 2019

