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Il Nuovo Cimento, Vol. 38 n. 3 (2015)

The GIREP-MPTL international conference on "Teaching/Learning Physics: Integrating Research into Practice" (GIREP-MPTL 2014) was held from 7 to 12 July 2014, at the University of Palermo, Italy. The theme of the conference underlined aspects of great relevance in contemporary science education. In fact, during the last few years, evidence-based physics education research provided results concerning the ways and strategies to improve student conceptual understanding, their interest in physics, their epistemological awareness and insights for the construction of a scientific citizenship. The conference offered an opportunity for in-depth discussions of these important issues.

The conference proceedings are published in open access.



Il Nuovo Cimento, Vol. 38 n. 4 (2015)

The 2015 Rencontres de Physique de la Vallée d'Aoste were held at the Planibel Hotel of La Thuile, Aosta Valley, on March 1-7, with the twenty-ninth edition of "Results and Perspectives in Particle Physics". The physics programme included various topics in particle physics, also in connection with present and future experimental facilities, as cosmology and astrophysics, neutrino physics, CP violation and rare decays, electroweak and hadron physics with e^+e^- and hadron colliders, Higgs physics, heavy flavours, search for new physics and prospects at future facilities. Also a special session of "Science and Society" was organized about the Applications of nuclear techniques to art and archaeology.

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La Rivista del Nuovo Cimento, Vol. 39 n. 3 (2016)

Edge physics in two-dimensional topological insulators

G. Dolcetto, M. Sasseti, T.L. Schmidt

Topology in condensed matter physics manifests itself in the emergence of edge or surface states protected by underlying symmetries. A review is presented here of two-dimensional topological insulators whose one-dimensional edge states are characterized by spin-momentum locking and protected by time-reversal symmetry. particular emphasis is given to their transport properties in the presence of electron interactions, which can allow the onset of different backscattering mechanisms, thus leading to deviations from the quantized conductance observed in the ballistic regime.



The combined presence of helicity and electron interactions creates a new paradigm of the one-dimensional world called helical Luttinger liquid, whose theoretical properties and experimental observations are reviewed.

EPJ E – Recent Highlights

The European Physical Journal E, Vol. 39, No. 2 (February 2016)

The whole issue is a topical issue on "Wetting and Drying: Physics and pattern formation". In particular, three interesting cases have been highlighted:

Wetting of polymers by their solvents

François Lequeux, Laurence Talini, Emilie Verneuil, Guillaume Delannoy, Pauline Valois

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Drying kinetics driven by the shape of the air/water interface in a capillary channel

Emmanuel Keita, Stephan A. Koehler, Paméla Faure, David A. Weitz, Philippe Coussot

[Read more](#)

Impact of the collective diffusion of charged nanoparticles in the convective/capillary deposition directed by receding contact lines

Diego Noguera-Marín, Carmen Luía Moraila-Martínez, Miguel Cabrerizo-Vílchez, Miguel Ángel Rodríguez-Valverde

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EPJ Plus – Recent Highlights

Rod-like cyanophenyl probe molecules nanoconfined to oxide particles: Density of adsorbed surface species

Stefan Frunza, Ligia Frunza, Constantin Paul Ganea, Irina Zgura, Ana Rita Brás, Andreas Schönhals

Studies of molecules confined to nano- or micropores are of considerable interest to physicists. That's because they can manipulate or stabilise molecules in unstable states or obtain new materials with special properties. In a new study published in EPJ Plus, Stefan Frunza and colleagues have discovered the properties of the surface layer in probe molecules on the surface of oxide particles. These properties depend on the interaction at the interface. In this particular study, probes are formed by adsorption of rod-like cyanophenyl derivatives on the surface of oxide particles. The authors found that their surface layers behave like glass-forming liquids.

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