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Il Nuovo Saggiatore

Il nuovo numero de *Il Nuovo Saggiatore*, Vol. 35, n. 1-2 (2019) è disponibile **online**.

Il numero si apre con un ricordo del compianto collega e amico Pio Picchi, già Vicepresidente SIF, Socio Benemerito, e creatore de *Il Nuovo Saggiatore*.

Inoltre, in questo numero troverete interessanti articoli su

- A research lasting one hundred years and the beginning of a new exploration of the Universe (M. Branchesi)
- The arcane ultra-high energy cosmic radiation (A. Bueno Villar)
- LIQUITOPY® - addressing a new paradigm in optical microscopy (A. Diaspro) (articolo in libera consultazione nello spazio **online** "free to read" de *Il Nuovo Saggiatore*)
- Sola scriptura mathematica (E. Giannetto)
- The ancient Beijing Astronomical Observatory (A. Bettini)
- High T_c superconductivity: the Erice legacy (G. Benedek)

Nella rubrica *Il Nostro Mondo* sono presentati i programmi della Scuola Estiva "Enrico Fermi" di Varenna, della Joint EPS-SIF International School on Energy, del Simposio Internazionale *Passion for Science* e l'annuncio del 105° Congresso Nazionale della SIF presso il Gran Sasso Science Institute a L'Aquila. In sede di Congresso si terranno le **elezioni** delle nuove Cariche Sociali della SIF per il triennio 2020-2022. Infine, in evidenza anche i bandi dei premi della SIF tra cui il Premio "Enrico Fermi".

Il Nuovo Saggiatore è fruibile online e su APP per tutti i soci in regola.

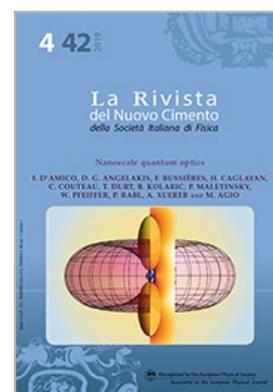


La Rivista del Nuovo Cimento Vol. 42 N. 4 (2019)

Nanoscale quantum optics

I. D'Amico, D. G. Angelakis, F. Bussières, H. Caglayan, C. Couteau, T. Durt, B. Kolaric, P. Maletinsky, W. Pfeiffer, P. Rabl, A. Xuereb, M. Agio

Nanoscale quantum optics explores quantum phenomena in nanophotonics systems for advancing fundamental knowledge and for developing new photonics-based technologies. This review discusses progress and prospects in the field, with emphasis on four main research areas: 1. generation, detection, manipulation and storage of quantum states of light at the nanoscale; 2. nonlinearities and ultrafast processes in nanostructured media; 3. nanoscale quantum coherence; 4. cooperative effects, correlations and many-body physics tailored by strongly confined optical fields. While the



focus is mainly on basic developments, the review also highlights technological implications, including the results of a recent market research study.

Il Nuovo Cimento Vol. 41 N. 6 (2018)

Papers presented at the XVIII National Conference of the Italian Society for Radiation Research, SIRR 2018, Rome, 10–13 September 2018, edited by *F. Antonelli, S. Bortolussi, V. Dini, D. Dondi, A. Sgura and M. Pugliese*

This volume includes the contributions presented at the 18th National Conference of the Italian Society for Radiation Research (SIRR), held on September 10-13, 2018, at the Science Department of University "Roma Tre", Rome, Italy. The SIRR interdisciplinary scientific society, which includes physicists, biologists, chemists and physicians, organizes the National Conference every two years. This represents an opportunity for scientists of different disciplines to share and discuss recent data and findings on relevant physical and biological basic mechanisms of radiation action and their consequences for risk assessment and radiation therapy.



EPJ E – Highlights

Collective behaviour of red blood cells in confined channels

G.R. Lazaro, A. Hernandez-Machado, I. Pagonabarraga

Blood consists of a suspension of cells and other components in plasma, including red blood cells, which give it its red colour. When blood flows through the narrowest vessels in the body, known as the capillaries, the interactions between the cells become much more important. In a new study published in EPJ E, a team of researchers led by Ignacio Pagonabarraga from the University of Barcelona, Spain, has now developed a mathematical model of how red blood cells flow in narrow, crowded vessels. This could help design more precise methods for intravenous drug delivery, as well as 'microfluidic chips' incorporating artificial capillaries, which could offer faster, simpler and more precise blood-based diagnoses. Pagonabarraga and his colleagues developed a model of red blood cells, which, as has been observed through the microscope, have slightly elastic walls, and are suspended in plasma with a force introduced to prevent contact between the cells. They also modelled various concentrations of cells flowing through channels two to three times wider in diameter than the cells themselves, which is typical of or slightly larger than the diameter of a capillary.



EPL – Highlights from the previous volumes

Spin-freezing and Sachdev-Ye model

by *P. Werner et al.*

Martingale theory for housekeeping heat

by *R. Chétrite et al.*

Subharmonic Shapiro steps for Weyl semimetal

by *O.O. Shvetsov et al.*

Apex predation, phase transition and biodiversity

by *D. Bazeia et al.*

EPL Highlights are published in the first issue of each volume, *i.e.* four times a year, as well as in Europhysics News (EPN).

