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Giornale di Fisica Vol. 60 N. 1 (2019)
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Accanto ai lavori "La Macchina della Vita" (Mario Rasetti), "Studiare i raggi cosmici con il nuovo rivelatore ArduSiPM" (Domenico Liguori, Pasquale Barone), "Una esperienza analogica sulla meccanica statistica dell'equilibrio termico" (Ido Borsini), "Innovazione didattica nell'insegnamento della Fisica per le Scienze Biologiche" (Assunta Bonanno, Giacomo Bozzo, Peppino Sapia), "Nota su alternanza scuola-lavoro" (Wanda M. Alberico), "Riccardo Felici: un fisico patriota nel secondo centenario della nascita" (Paolo Rossi), da segnalare l'articolo di Alessandro Bettini

"Inerzia"

La storia delle parole della fisica, di come i concetti da esse indicati si sono sviluppati, precisandosi, nel tempo fornisce sempre spunti di approfondimento. Ecco perché la rubrica *Per saperne di più* ne presenta. Questa è la volta della legge di *inerzia*. Fu la scoperta di questo principio da parte di G. Galilei che sbloccò lo sviluppo della fisica rimasto fermo da secoli nei dogmi aristotelici, aprendo così la via alla scienza moderna. Si cerca di chiarirne la storia con gli scritti degli autori rilevanti sino alla scoperta di Galilei e alla formalizzazione, e primo uso della parola *inertia*, da parte di Newton. Oltre a questi, sono gli atomisti greci, T. Digges, G. Bruno, P. Gassend, R. Descartes e C. Huygens. Leggendoli si vede, in particolare, come l'attribuzione a Galilei della cosiddetta inerzia circolare invece che rettilinea sia un falso storico.

NOVITÀ: i fascicoli pubblicati a partire dal 2019 sono disponibili nell'Area Soci per tutti i Soci della SIF in regola con la quota sociale.

La Rivista del Nuovo Cimento Vol. 42 N. 3 (2019)
Experimental nuclear astrophysics in Italy
C. Broggini, O. Straniero, M.G.F. Taiuti et al.

Nuclear astrophysics, the union of nuclear physics and astronomy, shapes the Universe, from the structure of nuclei to the abundances of chemical elements, from nuclear reactions to the life and death of stars. The field has gone through an impressive expansion during the last twenty years, thanks to milestone advances in astronomical observations, cross section measurements, powerful computer simulations and much-refined stellar models. The Italian research groups supported by the Italian National Institute for Nuclear Physics (INFN) strongly contributed, and contributes, to every domain in the field, in some cases leading worldwide unique experiments. The groups provided fundamental experimental input, in particular, for accurate calculations of the solar neutrino energy spectrum, for those of the of Big Bang nucleosynthesis

isotope abundances and for the firm identification of the stellar environments where a few key isotopes are coming from. This review discusses the astrophysical scenarios where nuclear astrophysics plays an essential role and provides detailed descriptions of the status and perspectives of the experiments of the INFN scientific programmes.

Il Nuovo Cimento Vol. 41 N. 5 (2018)

Papers presented at the International Workshop on Multi facets of EoS and Clustering (IWM-EC 2018), Catania (Italy)

Edited by *B. Borderie, J. Frankland, N. Le Neindre, S. Pirrone, G. Politi, P. Russotto*

This volume includes all the contributions presented at the *International Workshop on Multi facets of EoS and Clustering* (IWM-EC 2018), held in May 2018 at Dipartimento di Fisica e Astronomia and INFN - Sezione di Catania and Laboratori Nazionali del Sud in Catania, Italy. The meeting, organized every two years alternately in France and Italy, follows a long tradition of conferences organized by CHIMERA and INDRA Collaborations in the past years and focuses on the most recent experimental and theoretical achievements in the field of heavy-ions physics, related to fragmentation and clustering phenomena.

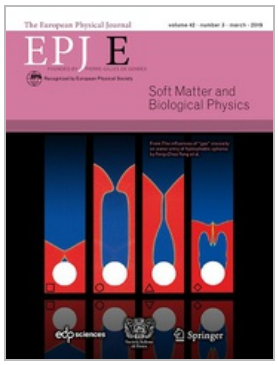
EPJ A – Highlights

Reactions along the astrophysical s-process path and prospects for neutron radiotherapy with the Liquid-Lithium Target (LiLiT) at the Soreq Applied Research Accelerator Facility (SARAF)

M. Paul et al.

A liquid-lithium target (LiLiT) bombarded by a 1.5 mA, 1.92 MeV proton beam from the SARAF superconducting linac acts as a ~30 keV quasi-Maxwellian neutron source via the ^{7}Li(p,n) reaction with the highest intensity (5×10^{10} neutrons/s) available todate. We activate samples relevant to stellar nucleosynthesis by slow neutron capture (s-process). Activation products are detected by α, β or γ spectrometry or by direct atom counting (accelerator mass spectrometry, atom-trap trace analysis). The neutron capture cross sections, corrected for systematic effects using detailed simulations of neutron production and transport, lead to experimental astrophysical Maxwellian averaged cross sections (MACS). A parallel effort to develop a LiLiT-based neutron source for cancer therapy is ongoing, taking advantage of the neutron spectrum suitability for Boron Neutron Capture Therapy (BNCT) and the high neutron yield available.

EPJ E – Highlights



Breakup of finite-size liquid filaments: Transition from no-breakup to breakup including substrate effects

A. Dziedzic, M. Nakrani, B. Ezra, M. Syed, S. Popinet, S. Afkhami

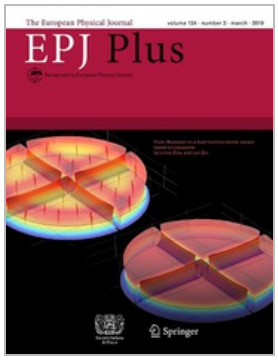
Whether we're aware of it or not, in day-to-day life we often witness an intriguing phenomenon: the breakup of jets of liquid into chains of droplets. It happens when it rains, for example, and it is important for inkjet printers. However, little is known about what happens when a liquid jet, also known as a liquid filament, breaks up on top of a substrate. According to a new study, the presence of a nearby surface changes the way the filament breaks up into smaller droplets. In a new paper published by Andrew Dziedzic at the New Jersey Institute of Technology in Newark, New Jersey, USA, and colleagues in EPJ E, computer

simulations are used to show that a filament is more likely to break up near a surface. The authors examined how different values of surface tension, the viscosity of the liquid and the dimensions of the liquid filament affect the way droplets are formed. This has important implications for a range of areas - from technology that uses tiny amounts of fluids and requires precise dosing, to the study of biological and geological systems.

EPJ Plus – Highlights

Of Naturalness and Complexity

S. Succi



Many scientists have been disappointed that no new elementary particles have been discovered at CERN's Large Hadron Collider since the Higgs Boson in 2012. The failure to detect particles that had previously been predicted by theory is only one example of a 'hole' that has recently appeared in the concept of naturalness in theoretical physics. In simple terms, the concept states that physical parameters should depend roughly equally on all the terms used to calculate them, in terms of proportion. Sauro Succi, a theoretical physicist at the Fondazione Istituto Italiano di Tecnologia in Rome, Italy, has now published an intriguing essay in the journal EPJ Plus in which he argues that several common natural phenomena do not operate under 'naturalness' at all. Rather, they can only be explained using parameters with widely separated numerical values.