

# Editoria - luglio 2019

📅 29-07-2019 ↗ <http://www.primapagina.sif.it/article/978>

## Giornale di Fisica Vol. 60 N. 2 (2019)

### È online e in stampa il secondo numero del Vol. 60 del 2019

Accanto ai lavori "Gli studenti del Progetto EEE sulle orme di Eratostene per la misura del raggio della Terra" (Collaborazione EEE), "Il futuro dell'astronomia gamma" (Patrizia A. Caraveo), "Video-analisi di sistemi di riferimento in caduta libera e Principio di Equivalenza" (G. Bozzo), "Il principio di sovrapposizione e le misure in meccanica quantistica" (Mario Pingitore), "Guidobaldo, Galileo e l'esperimento del lancio della biglia tinta d'inchiostro" (P. Cerreta), "L'antico Osservatorio Astronomico di Pechino" (Alessandro Bettini), da segnalare l'articolo di Enzo Iarocci

### 1929: Van de Graaff e Lawrence inventano due nuovi acceleratori di particelle, ancora attuali

Tutti sanno di LHC il grande anello acceleratore di particelle e delle sue scoperte scientifiche, meno noto è che siano oltre diecimila le macchine al mondo che generano fasci di particelle per gli usi più disparati. Se le origini di tali apparati risalgono alla fisica europea del primo Novecento, sono americani due cruciali sviluppi del 1929: Robert Van de Graaff concepisce l'omonimo apparecchio elettrostatico capace di prestazioni tuttora insuperate nel suo ambito, ed Ernest Lawrence inventa il ciclotrone, l'antenato delle odierne macchine anulari, promuovendone poi evoluzioni e applicazioni ancora attuali, fino a stabilire il modello del moderno laboratorio interdisciplinare.

**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.**

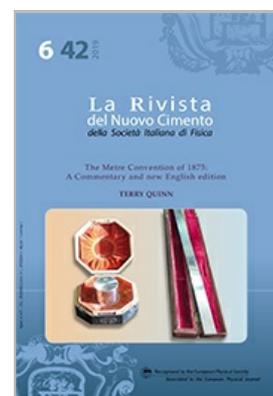


## La Rivista del Nuovo Cimento Vol. 42 N. 6 (2019)

### The Metre Convention of 1875: A Commentary and new English edition

*Terry Quinn*

On 20 May this year, a new definition of the International system of Units, SI, came into force entirely based on the constants of physics. It was adopted by the 26th General Conference on Weights and Measures in Versailles on 16 November 2018. It is remarkable that the formalities underpinning the Conference, and all that went before it to prepare the new definitions, took place under the terms of a Treaty, the Metre Convention, originally signed in 1875. The Convention, which created the first international scientific institute, the International Bureau of Weights and Measures, located at Sèvres, with appropriate international governance, remains today unchanged in its basic structure. This review outlines the origins of the Convention and discusses its key Articles in the light of all the advances in science and changes in international relations since 1875, and shows that it remains today the essential foundation of international metrology. The Appendix contains the first complete English edition of the Convention of 1875, as modified in 1921,



with explanatory notes and references.

## EPJ E – Topical Review

### Lattice Boltzmann methods and active fluids

*L.N. Carenza, G. Gonnella, A. Lamura, G. Negro, A. Tiribocchi*

Active fluids are living matter or biologically inspired systems, consisting of self-propelled units that burn stored or ambient energy and turn it into work, eventually giving rise to systematic movement. In a new Topical Review paper published in EPJE, authors from groups in Bari (University of Bari, INFN, and the Istituto Applicazioni Calcolo, CNR) and the Center for Life Nano Science, La Sapienza, Rome describe the use of Lattice Boltzmann Methods (LBM) in the study of large scale properties of active fluids.

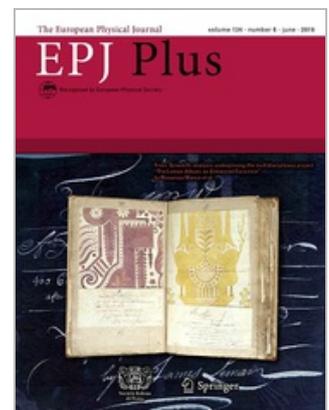


## EPJ Plus – Highlights

### Locality and multi-level sampling with fermions

*M. Ce*

Over the last few decades, the exponential increase in computer power and accompanying increase in the quality of algorithms has enabled theoretical and particle physicists to perform more complex and precise simulations of fundamental particles and their interactions. If you increase the number of lattice points in a simulation, it becomes harder to tell the difference between the observed result of the simulation and the surrounding noise. A new study by Marco Ce, a physicist based at the Helmholtz-Institut Mainz in Germany and recently published in EPJ Plus, describes a technique for simulating particle ensembles that are 'large' (at least by the standards of particle physics). This improves the signal-to-noise ratio and thus the precision of the simulation; crucially, it also can be used to model ensembles of baryons: a category of elementary particles that includes the protons and neutrons that make up atomic nuclei. Ce's simulations employ a Monte Carlo algorithm: a generic computational method that relies on repeated random sampling to obtain numerical results. These algorithms have a wide variety of uses, and in mathematical physics they are particularly well suited to evaluating complicated integrals, and to modelling systems with many degrees of freedom.

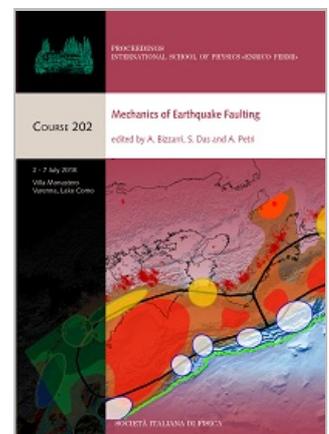


## Proceedings of the International School of Physics "E. Fermi" – Course 202

### Mechanics of Earthquake Faulting

Edited by *A. Bizzarri, S. Das, A. Petri*

The mechanics of earthquake faulting is a multi-disciplinary scientific approach combining laboratory inferences and mathematical models with the analysis of recorded data from earthquakes, and is essential to the understanding of these potentially destructive events. The modern field of study can be said to have begun with the seminal papers by B.V. Kostrov in 1964 and 1966. This book presents lectures delivered at the summer school 'Mechanics of Earthquake Faulting', held under the umbrella of the Enrico Fermi International School of Physics in Varenna, Italy, from 2 to 7 July 2018. The school was attended by speakers and participants from many countries. One of the most important goals of the school was to present the state of the art of the physics of earthquakes, and the 10 lectures included here cover the most challenging aspects of the mechanics of faulting. The topics covered during the school give a very clear picture of the most recent advances in the physics of earthquake ruptures



and also highlight the open issues and questions that are still under debate, and the book will be of interest to all those working in the field.