

Aula Magna 4 Luglio, 2014 - h 10:00

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CONNECTIONS BETWEEN MICROCOSMOS AND MACROCOSMOS

Statistical mechanics, together with classical, quantum and relativistic mechanics, and electromagnetism, is one of the pillars of contemporary physics. The history of its basic formulation started in the 1870's with Boltzmann, and later with Gibbs. One of its central concepts is the entropy. This crucial aspect has physically and mathematically evolved quite a lot during the last 140-150 years. Its basic ingredients will be introduced, and some of its applications in natural, artificial and social sciences will be briefly described.

Bibliography in <http://tsallis.cat.cbpf.br/biblio.htm>



Professor Constantino Tsallis is a physicist in the area of statistical mechanics, head of the Department of Theoretical Physics of the Centro Brasileiro de Pesquisas Físicas, in Rio de Janeiro (Ministry of Science and Technology of Brazil), and also head of the National Institute of Science and Technology for Complex Systems of Brazil. He obtained his title of Docteur d'État ès Sciences Physiques from the University of Paris-France in 1974. He has worked in a variety of theoretical subjects in the areas of critical phenomena, chaos and nonlinear dynamics, economics, cognitive psychology, immunology, population evolution, among others. Since two decades, he is focusing on the entropy and the foundations of statistical mechanics, as well as on some of their scientific and technological applications. Indeed, he proposed in 1988 a generalization of Boltzmann-Gibbs entropy and statistical mechanics. This generalization is presently being actively studied around the world: a Bibliography containing more than 3,000 directly related articles, by over 5,000 scientists from all over the world, is available at <http://tsallis.cat.cbpf.br/biblio.htm> Prof. Tsallis' contributions have received over 10,000 ISI citations (over 2,300 of them for his 1988 paper), which currently makes him one among the most cited scientists of all times in Latin America. He has received many international and national distinctions (Guggenheim Foundation Award, Mexico Prize for Science and Technology, Rio de Janeiro Prize of Science and Technology, among many others), and has been given in four occasions the title of Doctor Honoris Causa by Universities from Argentina (Cordoba), Brazil (Maringa and Natal) and Greece (the Thessaloniki Aristotelian University). He is member of the Academy of Sciences of Brazil, as well as of the Academy of Economical, Political and Social Sciences of Brazil. He is main editor of *Physica A* – Elsevier (Amsterdam), and has supervised close to 40 Doctor and Master Thesis. He has given regular undergraduate and graduate courses in Physics in Brazil, Argentina, USA, France and Germany, and has given over 800 invited lectures around the world. In 2005 and 2006, he was fully supported by the US Air Force Research Laboratory to do basic research at the Santa Fe Institute, New Mexico, where he co-authored several papers with Murray Gell-Mann and James Doyne Farmer. Prof. Tsallis is an external Professor of the Santa Fe Institute.