

## ΔΙΑΛΕΞΗ

Την Πέμπτη 19/05/2011 και ώρα 09:30 στην Αίθουσα Τηλεκπαίδευσης της Πανεπιστημιακής Μονάδας Σάμου, ο Καθηγητής του Αριστοτελείου Πανεπιστημίου Θεσσαλονίκης κ. Νικόλαος Σπύρου, θα δώσει διάλεξη με τίτλο: «CONFORMAL DYNAMICAL EQUIVALENCE AND APPLICATIONS». Η διάλεξη θα πραγματοποιηθεί με σύνδεση αμφίδρομης μετάδοσης εικόνας και ήχου με την αντίστοιχη Αίθουσα Τηλεκπαίδευσης στη Μυτιλήνη απ' όπου θα μπορεί οποιοσδήποτε ενδιαφερόμενος να συμμετέχει στη διαδικασία σε πραγματικό χρόνο. Παρακαλούνται όσοι επιθυμούν να παρακολουθήσουν τη διάλεξη είτε στη Σάμο είτε στη Μυτιλήνη να επικοινωνήσουν με τον κ. Τραχίλη Δημήτρη (τηλ. 22730 82247, e-mail: dtrachilis@aegean.gr )

### Abstract

The “Conformal Dynamical Equivalence” (CDE) approach is briefly reviewed, and some of its applications, at various astrophysical levels (Sun, Solar System, Stars, Galaxies, Clusters of Galaxies, Universe as a whole), are presented. According to the CDE approach, in both the Newtonian and general-relativistic theories of gravity, the isentropic hydrodynamic flows in the interior of a bounded gravitating perfect-fluid source are dynamically equivalent to geodesic motions in a virtual, fully defined fluid source. Equivalently, the equations of hydrodynamic motion in the former source are functionally similar to those of the geodesic motions in the latter, physically, fully defined source. The CDE approach is followed for the dynamical description of the motions in the fluid source. After an observational introduction, taking into account all the internal physical characteristics of the corresponding perfect-fluid source, and based on the property of the isentropic hydrodynamic flows (quite reasonable for an isolated physical system), we examine a number of issues, namely, (i) the classical Newtonian explanation of the celebrated Pioneer-Anomaly effect in the Solar System, (ii) the possibility of both the attractive gravity and the repulsive gravity in a non-quantum Newtonian framework, (iii) the evaluation of the masses - theoretical, dynamical, and missing - and of the linear dimensions of non-magnetized and magnetized large-scale cosmological structures, (iv) the explanation of the flat-rotation curves of disc galaxies, (v) possible formation mechanisms of winds and jets, and (vi) a brief presentation of a conventional approach - toy model to the dynamics of the Universe, characterized by the dominant collisional dark matter (with its subdominant luminous baryonic “contamination”), correctly interpreting the cosmological observational data without the need of the notions dark energy, cosmological constant, and universal accelerating expansion.