École Internationale Daniel Chalonge

Workshop CIAS Meudon 2010

DARK MATTER IN THE UNIVERSE AND UNIVERSAL PROPERTIES OF GALAXIES: THEORY AND OBSERVATIONS

CIAS Observatoire de Paris, Château de Meudon, Meudon campus

8, 9, 10 and 11 June 2010

PURPOSE AND TOPICS

The Workshop addresses the problem of Dark Matter in the Universe and the Universal properties of Galaxies. An effort of clarification and synthesis will be made by combining in a conceptual framework, theory, analytical, observational and numerical simulation results. The subject will be approached in a threefold way:

1: Conceptual context: Dark Matter in cosmology and astrophysics: current status, perspective and prospective of the research in the subject: theory and observations

2: Astronomical observations linked to the galaxy structural properties and especially to the universal properties of galaxies: high quality rotation curves, kinematics, density profiles, gravitational lensing, small and large structures.

3: Numerical simulations, large structures, structures and substructures.

Special attention will be payed to the astrophysical understanding of the dark matter problems, the use of analytic and numerical methods to determine the properties, the distribution and the nature of dark matter.

TOPICS

- Kinetic theory and the recent progress in solving the Boltzmann-Vlasov equation to obtain the observed universal properties of galaxies. N-body numerical simulations.
- The dark matter surface density in galaxies.
The phase-space density of dark matter.
Particle model independent analysis of astrophysical dark matter.
- The mass of the dark matter particle at the keV scale as determined from theory combined to observations and numerical simulations.
- The impact of the mass of the dark matter particle on the small scale structure formation and the choice of the initial conditions.
- The radial profiles and the Dark Matter distribution. Cores versus Cusps.
- The recently highlighted keV scale Dark Matter.

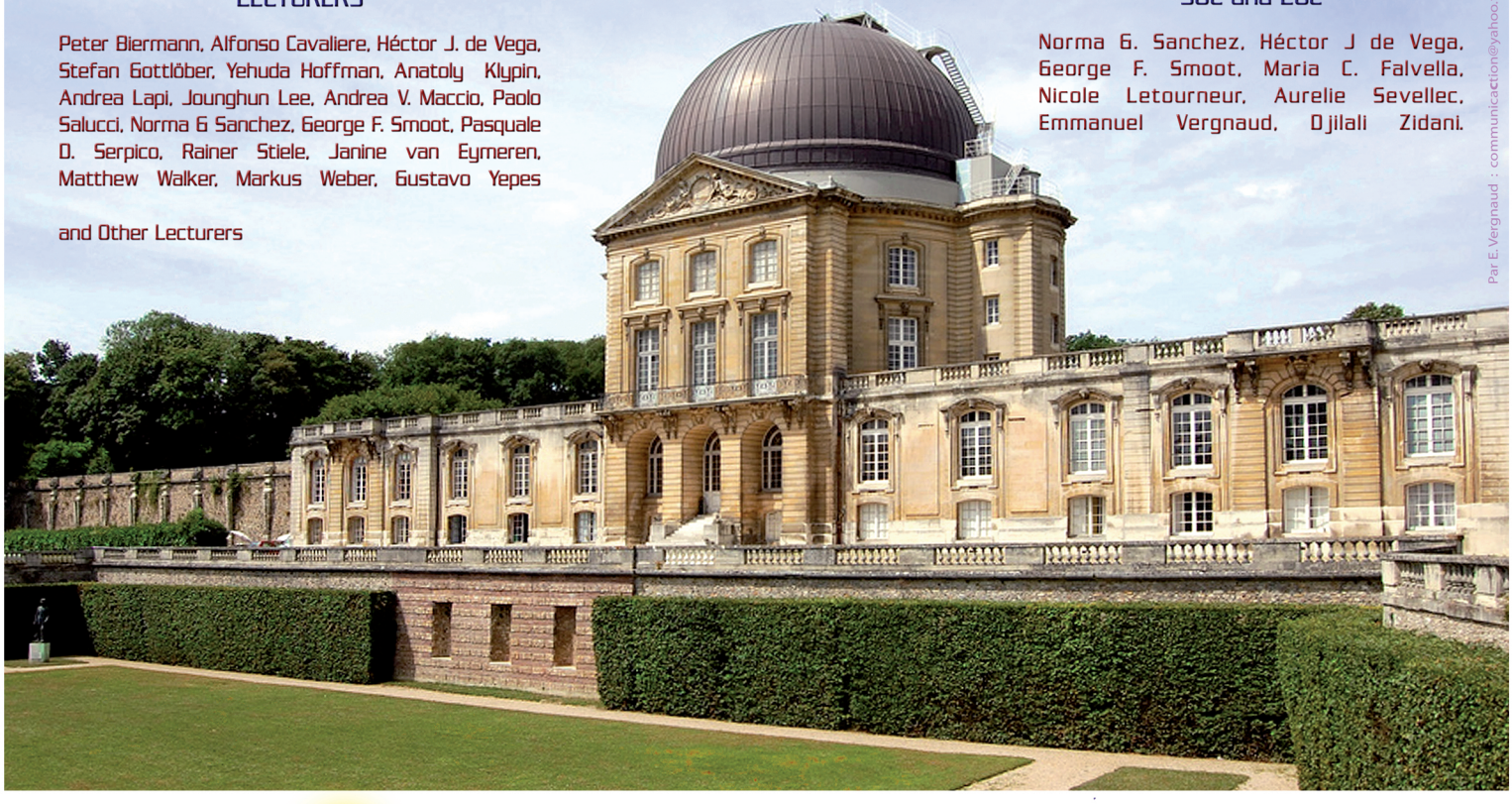
LECTURERS

Peter Biermann, Alfonso Cavaliere, Héctor J. de Vega, Stefan Gottlöber, Yehuda Hoffman, Anatoly Klypin, Andrea Lapi, Jounghun Lee, Andrea V. Maccio, Paolo Salucci, Norma G Sanchez, George F. Smoot, Pasquale D. Serpico, Rainer Stiele, Janine van Eymeren, Matthew Walker, Markus Weber, Gustavo Yepes

and Other Lecturers

SOC and LOC

Norma G. Sanchez, Héctor J de Vega, George F. Smoot, Maria C. Falvella, Nicole Letourneur, Aurelie Sevellec, Emmanuel Vergnaud, Djilali Zidani.



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http://chalonge.obspm.fr/Cias_Meudon2010.html