ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

PHYSICS COLLOQUIUM

Thursday, 18 March 2010
17:00-18:00

3rd Floor Seminar Room

" *Astrophysical Disks in a LCDM Universe: A Key to Fundamental Physics and Galaxy Formation*"

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Abstract: Understanding the formation and evolution of structure in the Universe constitutes one of the most fundamental goals of theoretical astrophysics. Over the past two decades, the LCDM cosmological model of hierarchical structure formation has emerged as the dominant paradigm in this endeavor owing to its remarkable ability to explain a plethora of observations on large scales and at various cosmic epochs. By allowing us to effectively compress the vast cosmological timescales that apply to the largest structures in our Universe down to weeks of virtual time, supercomputer simulations are the ideal means by which we can relate theoretical models to observational data. Moreover, recent advances in algorithms and supercomputer technology have provided the platform for increasingly realistic astrophysical modeling. In this talk, using high-resolution numerical simulations set within the LCDM paradigm, I will investigate the formation and evolution of astrophysical disks across a wide range of scales in the Universe. In the process, I will emphasize the importance of astrophysical disks in offering new insights in fundamental Physics and advancing our understanding of the processes of galaxy formation and evolution.