



ΓΕΝΙΚΟ ΣΕΜΙΝΑΡΙΟ ΤΜΗΜΑΤΟΣ ΦΥΣΙΚΗΣ

***SPECIAL  
PHYSICS COLLOQUIUM***

Thursday, 21 January 2010  
17:00-18:00

3<sup>rd</sup> Floor Seminar Room

***“Illuminating the Universe: Understanding the Physics  
of Star and Galaxy Formation”***

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Abstract

Formulating a theory of star formation is a central unsolved problem in astrophysics. It relates directly to the most fundamental questions on the origin and evolution of galaxies, stars, planets, and life itself, and is the link between the dark and the luminous constituents of the universe. Studies of star formation have been under way for more than sixty years. Yet, the theory that would start from observed properties of a chunk of interstellar matter and end with the onset of nuclear fusion in its interior has yet to be completed.

I will discuss the challenges of the task, which draws upon multiple branches of physics, including fluid dynamics, plasma physics, interaction of radiation with matter, condensed matter physics, atomic and nuclear physics, as well as mathematical/numerical methods, and chemistry. I will report on recent progress in resolving some of the major and long-standing unanswered physics problems of star formation, and on applications of our improved understanding of star formation in our cosmic neighborhood to building improved models of galaxy formation and evolution in a cosmological context.