



# UNIVERSITY OF CALIFORNIA RIVERSIDE

DEPARTMENT OF MATHEMATICS

## COLLOQUIUM

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**Daniel Sternheimer**  
(Keio University/Intitut de Mathématiques de Bourgogne)

"Deformations, Quantizations, and the Geometry of  
Space-Time: An Introductory Overview"

**Abstract:**

We present, from an epistemological point of view, the evolution of physical concepts in the context of the relation between mathematics and physics. We stress the importance of symmetries and of space-time in fundamental physical theories and show that the above evolution is best understood in the framework of the mathematical notion of deformation. Important paradigms include the concepts of relativity and quantization, exemplified by deformation quantization and its manifold avatars going from analytic and algebraic geometry to quantum groups and the "dual" aspect of quantum spaces. Deforming and quantizing Minkowski space-time and its symmetry to anti de Sitter has significant physical consequences that we sketch.

**Thursday, February 25th, 2010**

**Surge 284**

**4:10-5:00pm**

*Tea Time at 3:40pm*