



UCSB DISTINGUISHED LECTURES IN THE MATHEMATICAL SCIENCES

The Geometric Langlands Conjecture

- I. Arithmetic and Geometry, Abelian and Non Abelian
- II. Algebra and Analysis, Classical and Quantum

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Monday, May 12, 2008, 3:30 p.m., South Hall 6635
(Refreshments at 3:00 p.m. on Monday)
Tuesday, May 13, 2008, 3:30 p.m., South Hall 6635

Abstract for Lecture I: We will describe the Langlands program in general as a conjectural non abelian analogue of well known “abelian” results: class field theory on the arithmetic side, and the Abel-Jacobi theory of Riemann surfaces and their Jacobians on the geometric side. One powerful approach to the geometric Langlands conjectures involves abelianization via Hitchin’s integrable system and its spectral curves.

Abstract for Lecture II: Recent input from physics suggests that the geometric Langlands conjecture, as formulated by Deligne, Laumon, Beilinson and Drinfeld, can be viewed as a statement in quantum field theory. This has a classical limit which has now been proved, at least generically. The relationship between the classical and quantum versions is deep and mysterious. The quantum version can of course be studied as a deformation of the classical one. But there is tantalizing evidence – from quantum field theory as well as non abelian Hodge theory – that the full quantum version can also be understood as a twistor rotation of the classical version.