Quantization, Symplectic Groupoids and Physics

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Abstract

The theory of Lie algebroids and Lie Groupoids is a convenient framework for the study of Poisson Manifolds. In this talk we review the theory of geometric Quantization of Poisson Manifolds using Symplectic Groupoids. Furthermore, we describe how this theory yields a natural quantization procedure for physical systems associated with homogeneous spaces. At last, we discuss the possible appearances of "anomalies" in these systems due to the existence of distinct "inequivalent quantizations".