



*Institute of Mathematical Research
Department of Mathematics*

GEOMETRY SEMINAR

A “hands-on” introduction to deformation quantization and space-time (deformation and) quantization

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Abstract

Deformation quantization is a framework in which quantization is realized as a deformation of the (commutative) composition law of classical observables (functions on a phase space), without changing their nature. It coincides with usual quantization when a map into the Procrustean bed of Hilbert space can be defined but permits generalizations, in particular in the presence of curvature and/or singularities. We start with basic examples showing the essence of deformation quantization, its conceptual basis and its relations with usual quantization. (Dual objects define quantum groups and noncommutative spaces.) Deforming Minkowski space-time leads to AdS (anti de Sitter space), where significant physical consequences can be developed (e.g. composite QED, AdS/CFT correspondence, composite leptons). Combining all this leads to an ongoing program in which AdS would be quantized in regions related to black holes, which might explain a universe in accelerated expansion.

Date:	May 5, 2011 (Thursday)
Time:	3:30 - 4:30pm
Place:	Room 210, Run Run Shaw Bldg., HKU

All are welcome