THE UNIVERSITY **OF HONG KONG**

Institute of Mathematical Research
Department of Mathematics

Geometry Seminar

Projectively flat connection, Fourier Transform, and the Maslov Index

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Abstract

We investigate how the Fourier transform arises in the context of geometric quantization. Consider a Hilbert space bundle over the space of compatible complex structures on a symplectic vector. This bundle is equipped with a projectively flat connection. We obtain the Bargmann and Fourier transforms as parallel transports along a geodesic extended to the boundary. The space of real Lagrangian subspaces is the Shilov boundary of Siegel's upper-half-space, which has a natural Kähler form. The triple Maslov index is, up to a factor, the integral of the Kähler form on a surface. This result can be generalized to other Hermitian symmetric spaces (or symmetric domains). We also consider how the projectively flat connection behave under symplectic reduction. In the fermionic setting, there is also a projectively flat connection on the space of polarizations that defines spinor representations.

Date:	June 3, 2004 (Thursday)
Time:	4:00 – 5:00pm
Place:	Room 517, Meng Wah Complex

All are welcome