



INDIAN STATISTICAL INSTITUTE
Theoretical Statistics and Mathematics Unit, Kolkata

SEMINAR

Date: November 16, 2022, Wednesday
Time: 12:00 Hours

Venue:
L-infinity
(5th Floor, A.N. Kolmogorov Bhavan), ISI Kolkata

TITLE:
**Berezin-type quantization on compact even
dimensional manifolds**

SPEAKER:
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ABSTRACT:

We will introduce Berezin quantization and work out a local description of Berezin quantization on $\mathbb{C}P^d$. We show that a Berezin-type quantization can be achieved on a compact even dimensional manifold M^{2d} by removing a skeleton M_0 of lower dimension such that what remains is diffeomorphic to R^{2d} which we identify with \mathbb{C}^d and embed in $\mathbb{C}P^d$. A local Poisson structure and Berezin-type quantization are induced from $\mathbb{C}P^d$. This construction depends on the diffeomorphism. However, suppose $X = M \setminus M_0$ has a complex structure and we have from $X \setminus X_0$, (X_0 a set of measure zero or empty) a biholomorphism from it to $\mathbb{C}^d \setminus N_0$, (where N_0 is of measure zero or empty). As before we embed $\mathbb{C}^d \setminus N_0$ in \mathbb{C}^d and then into $\mathbb{C}P^d$ and we have a Berezin-type quantization induced from $\mathbb{C}P^d$. If we use another biholomorphism, we have a map of the two Hilbert spaces under consideration such that the reproducing kernel of one maps to the reproducing kernel of the other and we have an equivalent quantization. We have a similar construction where we consider an arbitrary complex manifold and use local coordinates to induce the quantization from $\mathbb{C}P^d$. We study the possibility of defining a global Berezin quantization on compact complex manifolds. Finally we give a simple construction of pullback coherent states on compact smooth manifolds.

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