



INDIAN STATISTICAL INSTITUTE
Theoretical Statistics and Mathematics Unit, Kolkata

SEMINAR

Date: November 24, 2022, Thursday
Time: 20:30 Hours

MODE: Online

Join with Google meet link: <https://meet.google.com/kpv-pgzv-rxw>

TITLE:

**Metric Compatibility and Levi-Civita Connections on
Quantum Groups**

SPEAKER:

Thomas Weber
University of Turin

ABSTRACT:

In order to achieve a better understanding of quantum gravity, we study mathematical models of noncommutative Riemannian geometry. The aim of this talk is to introduce such a Riemannian framework on quantum groups (Hopf algebras) expanding on a previous approach of Bhowmick and Mukhopadhyay. Our main tool is a new understanding of metric-compatibility based on a 'braided' sum of connection formula. This requires to identify connections are 'rational morphisms' in the biclosed category of Hopf modules and to lift Woronowicz braiding to the tensor product over the ground field. Using this formalism we are able to approach Levi-Civita connections even beyond central or coinvariant metrics. We provide sufficient conditions for the existence and uniqueness of quantum Levi-Civita connections and discuss examples, including the coinvariant central metric on the matrix quantum group $Sl_q(2)$. The talk is based on a collaboration with P. Aschieri.

ALL ARE CORDIALLY INVITED