



## **ICTS Geometry and Physical Mathematics Seminar**

**Title** : Spin-Statistics from Ribbon Histories

**Speaker** : Joseph Samuel (ICTS-TIFR, Bengaluru)

**Date** : Thursday, 04 June 2026

**Time** : 3:30 PM (IST)

**Abstract** : We present a simple, visual proof of the spin-statistics theorem, based on the observation that histories of spinning particles should be represented not by worldlines but by ribbons. This observation is justified from the coadjoint orbit analysis of the symmetry group. Our argument applies whenever the symmetry group topologically retracts to the Euclidean group  $E(3)$ , implying that neither special relativity nor even Galileian relativity are needed to prove the theorem. We also recover the Berry–Robbins geometric phase connection from this more general topological viewpoint.

**Venue** : Chern Lecture Hall

Zoom Link: <https://icts-res-in.zoom.us/j/96046701820?pwd=ddVZDk7V9YVJqcmwvStOc75zmCeQtF.1>

Meeting ID: 960 4670 1820

Passcode: 901959