



ICTS Statistical Physics & Condensed Matter Seminar

Title : Spin, Statistics and the Geometric Phase

Speaker : Joseph Samuel (ICTS-TIFR, Bengaluru)

Date : Wednesday, 24 June 2026

Time : 11:30 AM (IST)

Abstract : Feynman once remarked that we do not really understand the Spin-Statistics Theorem, since we do not have a proof that captures the essence of the theorem. I will 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 Galileian relativity are needed to prove the theorem. We also recover the Berry–Robbins geometric phase connection from this more general topological viewpoint.

Venue : Emmy Noether Seminar Room

Zoom Link: <https://icts-res-in.zoom.us/j/91255272266?pwd=AofexE3bDo32wbYt9YCNMrJwg7iaXb.1>

Meeting ID: 912 5527 2266

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