

## **Internal Seminar**

### **Quantum Phase Transition between Quantum Spin-glass and Quantum Dimer-paramagnet Phase of coupled Sachdev-Ye models**

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The Sachdev–Ye (SY) model describes a system of Heisenberg spins with random all-to-all interactions. At zero temperature, the ground state of this model is a quantum spin-glass (QSG) phase. In this work, we study two SY models coupled through an antiferromagnetic spin interaction at zero temperature. In the absence of inter-model coupling, each system independently realizes the conventional QSG ground state. Conversely, when the intra-model random interactions are absent, the system forms a quantum dimer–paramagnet phase. By tuning the ratio between the inter-model antiferromagnetic coupling and the intra-model random interaction strength, we investigate the resulting quantum phase transition and determine the critical coupling ratio separating the quantum dimer phase from the quantum spin-glass phase.

***Tuesday, Mar 17<sup>th</sup> 2026***

***16:00 Hrs***

***Class Room 1, TIFRH***