

## Dynamics of the Fermion-Rotor System

*mardi 10 mars 2026 09:30 (1 heure)*

In this talk, I will examine the dynamics of the fermion–rotor system, originally introduced by Polchinski as a toy model for monopole–fermion scattering. Despite its simplicity, the system is surprisingly subtle, with ingoing and outgoing fermion fields carrying different quantum numbers. I will show that the rotor acts as a twist operator in the low-energy theory, changing the quantum numbers of excitations that have previously passed through the origin to ensure scattering consistent with all symmetries, thereby resolving the long-standing Unitarity puzzle. I will then discuss generalizations of this setup with multiple rotors and unequal charges, and demonstrate how the system can be viewed as a UV-completion of boundary states for chiral theories, establishing a connection to the boundary conformal field theory based proposal for resolving the puzzle.

**Orateur:** LOLADZE, Vazha (University of Oxford)