

Geometry, Topology and Dynamics Seminar

Where does the Spin-Statistics Theorem come from?

Theo Johnson-Freyd (Northwestern University)

Abstract: The "spin-statistics theorem" is a physical phenomenon in which spinors — (-1) -eigenstates of rotation by 360° — are the same as fermions — (-1) -eigenstates of switching two identical particles. Physicists usually understand this phenomenon as a fact about certain representations of the Lorentz group. In this talk I will give a very different mathematical "origin" of the spin-statistics theorem. I will explain that spin-statistics arises in precisely the same way as does the physical phenomenon of "unitarity", which in turn depends on a fundamental but nontrivial coincidence: the absolute Galois group of \mathbb{R} happens to equal the group of connected components of the orthogonal group. This talk will assume no knowledge of physics.

Monday, November 23 at 3:00 PM in SEO 636
