



Department of Physics and Astronomy
FALL 2023 Colloquium Series

“Topological Study of Magnetic Confinement and Magnetic Quantum Tunneling”

Dr. Gabriel Martins

Sac State Department of Mathematics & Statistics

We discuss the confinement of a charged particle to a bounded region in space by the action of a magnetic field. We analyze how the shape of the region might help or obstruct the confinement of particles to its interior and mention some tools from topology that can be applied to this problem. We also discuss how concepts from differential geometry let's us understand this question in spaces of arbitrary dimension. Lastly, we discuss a magnetic quantum tunneling effect, and consider choices of magnetic fields which are able to confine classical particles but are unable to confine quantum particles. We mention a number of open questions in that direction as well.

Thursday, November 2, 2023

4:00 - 5:20PM

MND1015

Open & Free to all students, faculty and public