



**Idaho State
University**

**Mathematics
and Statistics**

Colloquium

Yang-Baxter cohomology and its applications

by

Dr. Emanuele Zappala

Assistant Professor, ISU

In this talk, I will introduce the (quantum) Yang-Baxter (YB) equation and describe some of its applications to low-dimensional topology (quantum invariants), statistical physics (Ising model), and theoretical physics (Chern-Simons theory). Then, I will discuss the cohomology of YB operators, and its relation to deformation theory. Various important families of examples arising from Lie algebras and Hopf algebras will be discussed, along with quandle theory. I will present recent work on the study of YB cohomology of Lie algebras, and some results on perturbative expansions of YB operators associated with it. Lastly, I will mention some of the applications of this perturbative approach to topology. The talk will be relatively self-contained.

Tuesday, Nov. 12

4:00 pm

PS 307

Zoom Meeting ID: 893 9607 9478