

# Center For Neutrino Physics Seminar

## Onkar Parrikar

University of Pennsylvania

*Entanglement Entropy in Chern-Simons Theory and Link Invariants*

Thursday, April 14th, 2017

4:00pm - 5:00pm

304 Robeson Hall

We will study the entanglement structure of states in Chern-Simons (CS) theory defined on  $n$ -copies of a torus. We will focus on states created by performing the Euclidean path-integral of CS theory on special 3-manifolds, namely link complements in  $S^3$ . The corresponding entanglement entropies provide framing independent link-invariants. In  $U(1)_k$  CS theory, we will give a general formula for the entanglement entropy across a bi-partition of a generic  $n$ -link into sub-links. In the non-Abelian case, we study various interesting 2 & 3-links including the Whitehead link & Borromean rings, both of which have non-trivial entanglement structures.