

DAY 5 (27 June): 10:50 – 11:30

In search of topological phases with non-abelian excitations

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Topological phases are characterized by emergence of topological invariance in their low-energy, long-distance physics. The very fact that we can postulate states with properties insensitive to local perturbations itself is remarkable. Recent proposals for using non-abelian excitations for decoherence free quantum computation added further enthusiasm. In this talk I will discuss two candidate systems for hosting non-abelian excitations: fractional quantum Hall states and Sr_2RuO_4 . I will first give an overview of the connection between topology and fractionalized excitations and highlight common features between these two very different systems. Then I will discuss our recent proposal for detecting non-abelian statistics. Before closing the talk, I will bring out open questions critical for harnessing and exploiting these exotic excitations.