**GILAD GOUR**, University of Calgary, Department of Mathematics and Statistics, Calgary, Alberta
*Quantum Resource Theories and Super Selection Rules*

In quantum information theory entanglement arises due to the restriction to local operations and classical communication (LOCC). In particular, entanglement can be considered as a quantum resource with which spatially separated parties can overcome or at least partly overcome the limitation of LOCC. Clearly, different types of restrictions corresponds to different kinds of quantum resource theories (QRTs). In this talk I will discuss the QRTs that emanate from various natural constraints. I will focus on QRTs that follow from the presence of super-selection rules or the absence of shared reference frames. In particular, I will discuss the analogies and distinctions between and among the different QRTs and show that, in general, QRTs in many aspects are very similar to entanglement theory. Such comparisons provide a much broader perspective on all of these resource theories and allow us to use the insights gained from one QRT to solve the problems that arise in the context of another QRT.

Joint work with Rob Spekkens.