Friday, April 29, 12pm
Speaker: Mike Hermele (speaker will be remote)

Title: Subsystem symmetry fractionalization in two dimensions

Abstract: Unlike conventional global symmetries that act on all of space, subsystem symmetries act only on rigid subspaces such as lines, planes or fractal regions. Such symmetries are of interest for their close connection to fracton physics and in their own right. In this talk, I discuss phenomena that can occur in two-dimensional systems with subsystem symmetry and anyon excitations, where the symmetry fractionalizes on anyon excitations. This turns out to be manifest in the mobility of the fractionalized excitations under dynamics that respect the symmetry. Such symmetry fractionalization was previously thought to be impossible, and indeed there are a number of differences from conventional symmetry fractionalization. I will present a general framework to describe subsystem symmetry fractionalization in two dimensions, and give a number of simple examples of this phenomenon in commuting Pauli Hamiltonians.

This talk is based on arXiv:2203.13244, work in collaboration with David Stephen, Arpit Dua, José Garre-Rubio and Dominic Williamson.