Geometry, Topology, and Physics Seminar

Gauge Symmetries, Higher Categories, and Gapped Phases of Matter

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Room 6635 South Hall

Abstract: I define and study TQFTs which describe the low-energy limit of gapped phases of gauge theories where the microscopic gauge group is partially Higgsed and partially confined. These TQFTs generalized the Dijkgraaf–Witten TQFT and can be described on a lattice using discrete 1-form and 2-form gauge fields. The gauge group is replaced by a gauge 2-group (a 2-category with a single object and invertible 1-morphisms and 2-morphisms). It is proposed that 2-group TQFTs are associated with new types of symmetry-protected gapped phases of matter.

This seminar is part of the NSF/UCSB 'Research Training Group' in Topology and Geometry. Information about future meetings can be found at http://www.math.ucsb.edu/~drm/GTPseminar/