

**Massachusetts Institute of Technology**  
**Department of Physics**

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**Condensed Matter Theory Seminar**

"Quantum anomalies of time-reversal and mirror-reflection symmetries  
in topological orders"

**Chenjie Wang**, Massachusetts Institute of Technology

**Abstract:** In quantum field theories, anomalous symmetries are those that are preserved classically but violated in the full quantum-mechanical theory. One way to avoid the violation is to put the theory on the boundary of a bulk theory in one higher dimensions. In condensed matter physics, these bulk systems are known as Symmetry-Protected Topological (SPT) phases (famous examples include 3D topological insulators/superconductors). Because of the recent development of SPT phases, we now have a better understanding of anomalies associated with various symmetries. In this talk, I will discuss quantum anomalies of time-reversal and mirror-reflection symmetries in 2D gapped topologically ordered systems, where excitations carry exotic properties such as fractional statistics and fractional charges.

**12:00pm noon**  
**Tuesday, February 20, 2018**  
**Duboc Room (4-331)**