1127-81-159   **Yuan-Ming Lu*** (`yuanming.lu@gmail.com`), Department of Physics, The Ohio State University, 191 W Woodruff Ave, Columbus, OH 43210. *Lieb-Shcultz-Matthis Theorems for Symmetry Protected Topological Phases.* Preliminary report.

The Lieb-Schultz-Mattis (LSM) theorem and its descendants represent a class of powerful no-go theorems that rules out any short-range-entangled (SRE) symmetric ground state irrespective of the specific Hamiltonian, based only on certain microscopic inputs inlcuding the symmetry and Hilbert space of the quantum many-body system. Here we introduce and prove a new class of LSM-type theorems, where any symmetry-allowed SRE ground state must be a symmetry protected topological (SPT) phase with exotic edge/surface states. Topological insulators and topological superconductors are examples of SPT phases. These theorems provide new insights into numerical models and experimental realizations of SPT phases in interacting bosons and fermions. (Received February 01, 2017)