Quantum Hall plateau transitions in the bulk entanglement spectrum XIN WAN, QIONG ZHU, Zhejiang University, GUANG-MING ZHANG, Tsinghua University — We discuss an alternative route to access the quantum Hall transitions via studying the so-called bulk entanglement spectrum. By partitioning the pure integer quantum Hall ground state in a checkerboard fashion we show the emergence of a quantum network with bulk gapless excitations at the Brillouin zone center without fine tuning. The emergent critical theories have a one-to-one correspondence to the Chern number characterization of the original ground states [arXiv:1409.4916]. For example, the resulting critical theory for the $\nu = 1$ state is the (2+1)-dimensional relativistic quantum field theory characterized by a single Dirac cone spectrum and a pair of fractionalized zero-energy states. For the $\nu = 2$ state the critical theory exhibits a quadratic band crossing. The effect of disorder on the transitions will be presented.

Xin Wan
Zhejiang Univ