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Entanglement Entropy for Quantum Phases of Extended Hubbard Model JON SPALDING, SHAN-WEN TSAI, University of California, Riverside — Evidence has shown the existence of a subtle bond order wave (BOW) phase separating the spin density wave (SDW) and charge density wave (CDW) phases of the insulating extended Hubbard model in one dimension at half filling. Due to the quantum nature of the phase transitions, prior efforts to establish the phase diagram have relied on a-priori defined order parameters. However, recent works have demonstrated that the two-site Von Neumann Entanglement entropy may be a "one-size-fits-all" way of observing quantum phase transitions, including the Berezinskii-Kosterlitz-Thouless transition that appears in the extended Hubbard model. We calculate this observable with DMRG to update the phase diagram of the extended Hubbard model including the tricritical point and weak-coupling limit.

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