Quantum phase transition in the one-dimensional half-filled asymmetric Hubbard model[1] YANG LIU, WEN-LING CHAN, SHI-JIAN GU, HAI-QING LIN, Department of Physics, The Chinese University of Hong Kong — We study the quantum phase transition in the one-dimensional asymmetric Hubbard chain at half-filling in terms of spin stiffness by the exact diagonalization method. Since the phase transition is believed to be of Kosterlitz-Thouless type, no local order parameter can describe such a transition. We find instead that spin stiffness might be able to describe the quantum phase transition since the spin degree of freedom is gapless in the Hubbard region. while gapful in the Falicov-Kimball region.

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