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Nonequilibrium transport between helical Luttinger liquids leads or helical Majorana modes[1] SUNG PO CHAO, Natl Tsing Hua Univ, SALMAN SILOTRI, CHUNG HOU CHUNG, Natl Chiao Tung Univ — We study a steady state non-equilibrium transport between (i) two interacting helical edge states of a two dimensional topological insulator, described by helical Luttinger liquids, through a quantum dot [1] or tunneling junction [2]. (ii) one Luttinger liquids lead and a helical Majorana modes lead connected by tunneling junction(s). We find the metal-to-insulator quantum phase transition for attractive or repulsive interactions in the leads when the magnitude of the interaction strength characterized by a charge sector Luttinger parameter goes beyond a critical value.

[1] S. P. Chao, S. A. Silotri, C. H. Chung, Phys. Rev. B 88, 085109 (2013)
[2] Y. W. Lee, Y. L. Lee, C. H. Chung, Phys. Rev. B 86, 235121 (2012)

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