Magnetic moment coupled to a helical edge can make weak correlations seem strong JUKKA VAYRYNEN, Yale University, FLORIAN GEISSLER, University of Würzburg, LEONID GLAZMAN, Yale University — We study the effect of a localized magnetic moment on the helical edge electron transport. The spin flips caused by the moment can be effective in the electron backscattering. We evaluate the resulting differential conductance as a function of temperature $T$ and applied bias $V$ for any value of $V/T$. At temperatures $T$ above the Kondo temperature, the deviation of the conductance from its quantized value displays a power-law temperature dependence, $\delta G \propto T^{-\alpha}$. We show that the Luttinger liquid effects with $3/4 < K < 1$ may lead to a small exponent $\alpha < 1/2$. Values of $K$ close to 1 correspond to weakly-correlated electrons. Our results provide an alternative interpretation of the recent experiment by Li et al. [1] where a power-law behavior of the conductance was attributed to strong correlation effects with the value of $K$ fine-tuned close to 1/4.

References