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Current noise from a magnetic moment in a helical edge[1] JUKKA VAYRYNEN, LEONID GLAZMAN, Yale Univ — We calculate the two-terminal current noise generated by a magnetic moment coupled to a helical edge of a two-dimensional topological insulator. When the system has in-plane $U(1)$ spin rotation symmetry, the noise $S(\omega)$ is given by the fluctuation-dissipation theorem even in the presence of a voltage bias V. The noise is strongly dependent on frequency on a small scale $\tau_K^{-1} \ll T$ set by the Korringa relaxation rate of the local moment. Exchange components breaking the symmetry give rise to shot noise in the limit of high bias. The differential noise dS/dV, commonly measured in experiments, is dominated by the symmetric component up to potentially large bias and disperses strongly with ω at low frequencies $\omega \sim \tau_K^{-1}$, unlike in the case of conventional elastic scatterer where dS/dV is given by white shot noise.

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