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Non-Collinear Ferromagnetic Luttinger Liquids NICHOLAS SEDLMAYR, SEBASTIAN EGGERT, JESKO SIRKER, TU Kaiserslautern — In the now classic Tomonaga-Luttinger model the presence of the electron-electron interaction in one dimension is shown to profoundly change the properties of the system. We consider here the magnetic and electronic properties of a *ferromagnetic* Luttinger liquid when it has a region of non-collinearity present, i.e. a domain wall. Spin-charge separation does not survive in this system, and the absence of both spin-charge separation and coherent spin-charge excitations has consequences for the spin-transfer-torque effects which cause domain wall motion. Furthermore the presence of the domain wall introduces a spin dependent scatterer into the problem, which will alter both the transport, and the static electronic, properties of the system. Finally we show how the magnetization dynamics of the domain wall will be modified for a Luttinger liquid.

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