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Profiles of magnons and spinons in a spin ladder DAVID CLARKE, OLEG TCHERNYSHYOV, Department of Physics and Astronomy, Johns Hopkins University, JEAN-BAPTISTE FOUET, Institut Romand de Recherche Numérique en Physique des Matériaux, FRÉDÉRIC MILA, Institute of Theoretical Physics, École Polytechnique Fédérale de Lausanne — We have studied quantum phase transitions between magnetization plateaux and gapless incommensurate states in a frustrated spin ladder placed in a magnetic field [**?**]. The transitions are triggered by a condensation of magnons (spinons) at the edge of an integer (half-integer) magnetization plateau. In this talk we will describe magnetization patterns formed in a finite ladder just off a magnetization plateau, i.e. at low concentrations of magnons or spinons. In these regimes the magnons and spinons behave as noninteracting fermions carrying spins $S^z = \pm 1$ and $\pm 1/2$, respectively. The spinons also act as domain walls, thus causing a dramatically different magnetization pattern from that of the magnons. The analytical results obtained agree well with numerical data.

References

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