

Abstract Submitted
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Magnetization plateaus in an antiferromagnetic Ising chain with single-ion anisotropy and quenched disorder¹ NILTON BRANCO, Universidade Federal de Santa Catarina, Departamento de Física, MINOS NETO, JOSE RICARDO DE SOUSA, Universidade Federal do Amazonas, Departamento de Física, PEDRO PICCINI, Universidade Federal de Santa Catarina, Departamento de Física — We have studied the presence of plateaus on the low-temperature magnetization of an antiferromagnetic spin-1 chain, as an external uniform magnetic field is varied. A crystal-field interaction is present in the model and the exchange constants follow a random quenched (binomial or Gaussian) distribution. Using a transfer-matrix technique we calculate the largest Lyapunov exponent and, from it, the magnetization at low temperatures as a function of the magnetic field, for different values of the crystal-field and of the width of the distributions. For the binomial distribution, the number of plateaus increases, with respect to the uniform case (F. Litaiff, J. R. de Sousa, and N. S. Branco, *Sol. St. Comm.* **147**, 494 (2008)) and their presence can be linked to different ground states, when the magnetic field is varied. For the Gaussian distributions, the uniform scenario is maintained, for small widths, but the plateaus structure disappears, as the width increases. We present also preliminary results for the behavior of the plateaus when aperiodic modulations are introduced.

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