Spin chains of Haldane-Shastri type and a generalized central limit theorem

Alberto Enciso

Departamento de Fsica Terica II, Universidad Complutense, 28040 Madrid, Spain
Departement Mathematik, ETH Zrich, 8092 Zrich, Switzerland
Tel: 34913945198, email: aenciso@fis.ucm.es

Abstract:

We shall discuss how the density of energy levels of a wide class of finite-dimensional quantum systems tends to a Gaussian distribution as the number of degrees of freedom increases. Our result will be based on a variant of the central limit theorem which is especially suited to models whose partition function is explicitly known. In particular, we shall prove that the level density of several spin chains of Haldane–Shastry type is asymptotically Gaussian when the number of sites tends to infinity, as suggested by previous numerical experiments.

References:
1. A. Enciso, F. Finkel, A. Gonzlez-Lpez, Spin chains of Haldane–Shastry type and a generalized central limit theorem, Phys. Rev. E 79 (2009) 060105(R).