Magnetization Ramp of the Kagomé Lattice Antiferromagnet — An Application of Parallelized Lanczos Algorithm—

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Magnetization process of the isotropic Heisenberg antiferromagnet on the kagome-lattice is studied, using the numerical-diagonalization method based on the Lanczos algorithm tuned for superparallel computers. Data from the numerical diagonalization are reexamined from the viewpoint of the derivative of the magnetization with respect to the magnetic field. We find that the behavior of the derivative around the 1/3 height of the magnetization saturation is quite different from the cases of typical magnetization plateaux. The magnetization process of the kagome-lattice antiferromagnet reveals a new phenomenon, which we call the "magnetization ramp"[1].

References

[1] H. Nakano and T. Sakai: J. Phys. Soc. Jpn. **79** (2010) 053707.