

# **Magnetic Properties of Spin-1/2 Antiferromagnet and High-Tc Parent Compound $\text{La}_2\text{CuO}_4$**

Mario Škrinjar

*Department of Physics, University of Novi Sad, Trg D. Obradovica 4, Novi Sad, Serbia*

**Abstract.** Magnetic properties of spin-1/2 antiferromagnet and high-Tc parent compound  $\text{La}_2\text{CuO}_4$  were studied. The system is approximated by the Heisenberg antiferromagnet. In-plane couplings up to third neighbours are considered together with in plane anisotropy and interlayer coupling. The Green's function method is applied for studying spin-wave dispersion and the Neel temperature within both Callen and Tyablikov's decoupling.

Parameters are determined by fitting the existing experimental data obtained by using high resolution inelastic neutron scattering. The influence of various parameters is examined. The calculation is performed both for tetragonal and orthorombic structure. Some of the results are also obtained using the generalization of Mermin-Wagner theorem, and they indicate that Tyablikov's decoupling is much more reliable. The results are generalized to systems with higher spins.