

Talk 19: 09:45–

# Direct Numerical Estimation of the Line Shape of ESR

Seiji Miyashita

*Department of Physics, University of Tokyo*

In the strongly interacting spin clusters, phase transitions do not take place but the short range order develops. There the ESR signal changes from paramagnetic type to the ordered one as a function of the temperature. In order to study such a change, we need the full information of the energy spectrum. We have tried to perform a direct numerical approach to this problem.[1,2,3,4] We have studied the temperature dependence of ESR line shape by using direct numerical estimation of the line shape of ESR. We studied the one-dimensional Heisenberg chain in which the line shape changes as a function the relative locations of the magnetic fields (static and AC) and the chain direction. This problem was studied by Nagata and Tazuke, and also by Yamada. We also studied ESR signals in various magnetic clusters, e.g. Ising-like antiferromagnetic cluster, triangle cluster, dimer systems, and also for a nanoscale molecular magnet  $V_{15}$ .

- [1] S. Miyashita, T. Yoshino and A. Ogasahara, *J. Phys. Soc. Jpn.* 68, 655 (1999).
- [2] A. Ogasahara and S. Miyashita, *J. Phys. Soc. Jpn.* 69, 4043 (2000).
- [3] S. Miyashita and A. Ogasahara, *J. Phys. Soc. Jpn.* 72, 2350 (2003).
- [4] M. Machida and S. Miyashita, *Physica E29*, 538 (2005).