Destruction of the Spin Diffusion Barrier near Paramagnetic Impurities in Pure NQR

G. B. Furman and S. D. Goren

Department of Physics, Ben Gurion University, 84105 Beer Sheva, Israel

Reprint requests to Dr. G. B. F.; E-mail: gregoryf@bgumail.bgu.ac.il

Z. Naturforsch. **57 a,** 307–314 (2002); received January 25, 2002

Presented at the XVIth International Symposium on Nuclear Quadrupole Interactions, Hiroshima, Japan, September 9-14, 2001.

The double resonance process between nuclei inside and outside the spin diffusion barrier is considered. By applying two radiofrequency fields, both of the same amplitude, one rotating at the frequency ω^S for nuclei inside of the diffusion barrier and one rotating at the frequency ω^I for nuclei outside of the diffusion barrier, the Hartmann-Hahn condition will be reached, which results in conservation of the quadrupole energy in the spin diffusion process and destruction of the spin diffusion barrier. This technique can be used to detect NQR signals from nuclei near paramagnetic impurities.

Key words: Paramagnetic Impurity; Spin Diffusion; Double Resonance.