

# Influence of the rf Field Inhomogeneity on Nutation NQR Spectra of Spin 3/2 Nuclei in Powders

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The influence of the rf field inhomogeneity on the NQR nutation spectra of spin  $I = 3/2$  nuclei in powder samples is investigated. To eliminate the rf field inhomogeneity effects, a method of reconstruction of the NQR nutation spectra, based on finding the deconvolution of the Fourier nutation spectrum with a function of the rf field distribution, is used. The method is successfully demonstrated for simulated and experimental NQR nutation spectra of  $^{35}\text{Cl}$  in  $\text{TiCl}_4$ . The lineshape analysis of reconstructed nutation spectra allowing the determination of the EFG asymmetry parameter is given. The real advantage of the proposed method is that the high-resolution nutation spectrum may be obtained for a sample filling up the entire coil.

*Key words:* Nuclear Quadrupole Resonance; 2D Nutation Spectroscopy;  
Electric Field Gradient Tensor.

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