

NQR Study of Dynamics in Incommensurate Phases

V. S. S. Sastry, K. Venu, S. Uma Maheswari^a, and R. K. Subramanian^b

School of Physics, University of Hyderabad, Hyderabad 500046, India

^a Mahindra British Telecom Ltd., Pimpri, Pune, India

^b Department of Physics, University of Utah, Salt Lake City, Utah, USA

Reprint requests to Prof. V. S. S. S., Fax: +91-40-3010120; E-mail: vssssp@uohyd.ernet.in

Z. Naturforsch. **55a**, 281–290 (1999); received September 11, 1999

Presented at the XVth International Symposium on Nuclear Quadrupole Interactions, Leipzig, Germany, July 25–30, 1999.

Dynamic processes in solids exhibiting structurally incommensurate phases are briefly reviewed, and the application of NMR and NQR is discussed. The unique utility of these methods, – arising due to, on one hand, the microscopic resonant nature of the probe used and, on the other, the presence of periodic, though incommensurable, structure –, is brought out by presenting recent results in a prototype system (Rb_2ZnCl_4) in the presence of randomly quenched disorder. In particular, the interesting new methodology of measuring, by analysing NQR spin echo modulation, ultra-slow diffusion like collective motions of ensembles of atoms in the presence of pinning effects due to disorder is illustrated with new results.