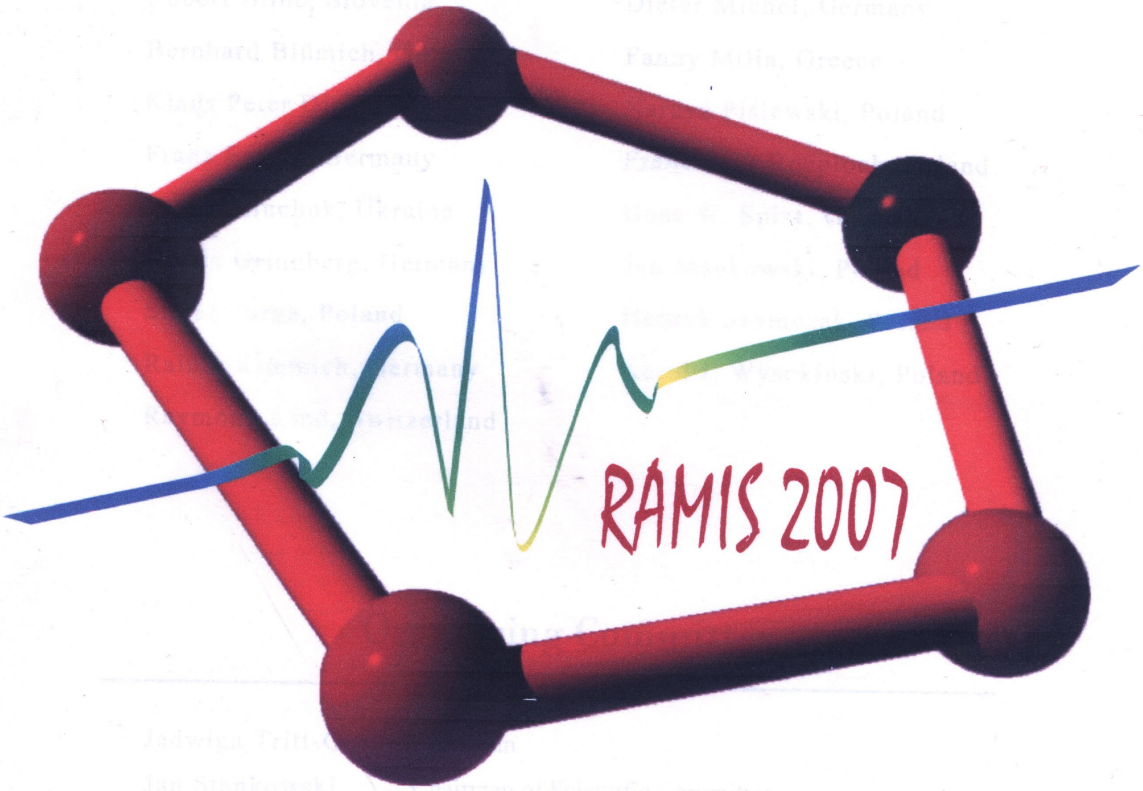
XXII International Conference on Radio and Microwave Spectroscopy

ABSTRACTS' BOOK



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NMR and dynamic disorder in solid state

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The concept of a distribution of the correlation times has been widely used in interpreting NMR data (line shape [1], second moment and relaxation times [2,3]). In the most of these works it was assumed that the randomness of correlation times is connected with a frozen lattice of random barriers and a tracer atom (molecule) moves without changing them. Moreover, randomness of potential barriers may not be only "static" but also may be "dynamic" [4]. In this case the renewal of the potential barriers occurs upon each jump of the tracer because the local environment is formed by particles that are identical with the hopping one and performing the same kind of motion. Evidently, this case is more appropriate for describing self-diffusion and reorientations in solids. In the present investigation we consider the temperature dependences of the second moment (M_2) (Fig.1) and spin-lattice relaxation times (T_1 and $T_{1\rho}$) in solids with "dynamic" disorder. In our model we assume that the potential barrier is a stochastic function of the time. Some relationships of the present model to several experimental systems are discussed.

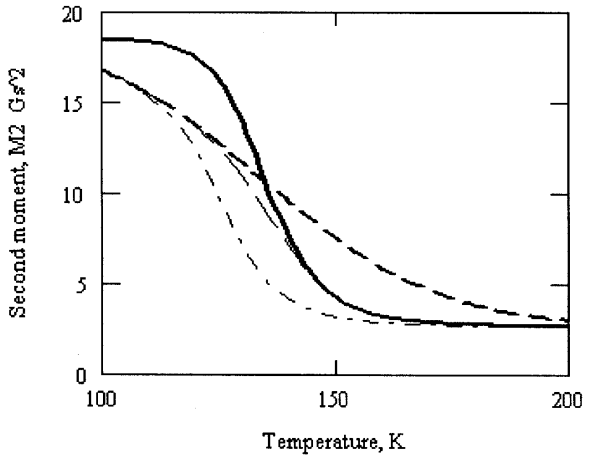

Fig. 1. The temperature dependences of second moment of NMR line for different model. (—) - [5]; (- - -) – [2]; other curves (·····) represent the dynamical models

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