

## Spin-echo NMR signal from confined Brownian particles in flow

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After the Hahn's discovery, the NMR spin echoes are extensively used in the studies of relaxational and diffusive properties of fluids and solids. The Brownian particle mobility is easily determined from spin-echo measurements in gradient magnetic fields. However, the original interpretation of such experiments fails in the case of small samples, as first shown by Woessner. At present, the interest to solutions of the generalized Bloch-Torrey equations that take into account boundary conditions for spins moving in a restricted volume increases in connection with the increased interest in the description of processes on microscale and below. Our contribution gives a description of the simple spin-echo experiment on a fluid sample of spin-bearing Brownian particles confined between two nearby plates. The characteristic diffusion time to cross the sample is much smaller than the NMR relaxation time and smaller than the interval between the applied rf pulses. We thus have a problem of restricted diffusion of spins, the solution to which was given in classical works by Robertson and Neuman. We have recovered these solutions by a different way and generalize them to the presence of hydrodynamic flow between the plates. The results are compared with experimental data from the literature.