

## Measurements of Spin Diffusion in Liquid $^3\text{He}$ in “Ordered” Aerogel

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We report measurements of spin diffusion in normal phase of  $^3\text{He}$  confined to a new type of aerogel<sup>1</sup> which was recently used in experiments with superfluid  $^3\text{He}$ <sup>2</sup>. This “ordered” aerogel consists of  $\text{Al}_2\text{O}_3$  strands which are nearly parallel to each other. At low temperatures quasiparticle collision rate should be limited by the aerogel strands. Consequently strong anisotropy of aerogel may result in anisotropy of  $^3\text{He}$  spin diffusion. We measured spin diffusion of  $^3\text{He}$  in such “ordered” aerogel preplated by  $\sim 2$  monolayers of  $^4\text{He}$  and at pressure of 2.4 bar. The experiments were performed using spin echo techniques for two orientations of the magnetic field gradient (parallel and normal to the strands). Values of spin diffusion for these two directions of the gradient were found to be different at temperatures less than 15-20 mK. In the low temperature limit the obtained principal values of the spin diffusion tensor are  $D_{\parallel} \approx 0.04 \text{ cm}^2/\text{s}$  and  $D_{\perp} \approx 0.02 \text{ cm}^2/\text{s}$ . In isotropic aerogel this would correspond to the quasiparticle mean free path of 800 nm and 400 nm. In further experiments we plan to investigate an influence of  $^4\text{He}$  coverage on spin diffusion.

<sup>1</sup>R. Sh. Askhadullin, P. N. Martynov, P. A. Yudin *et al.*, J. of Physics: Conf. Ser., **98**, 072012 (2008).

<sup>2</sup>R. Sh. Askhadullin, V. V. Dmitriev, D. A. Krasnikhin, *et al.*, this conference.