NMR Studies of Superfluid ^{3}He in "Ordered" Aerogel

R. Sh. Askhadullin[a], **V. V. Dmitriev**[b], D. A. Krasnikhin[b], P. N. Martynov[a], A. A. Osipov[a], A. A. Senin[b], and A. N. Yudin[b]

[a]A. I. Leypunsky Institute for Physics and Power Engeneering, Obninsk, Kaluga region, Russia
[b]P. L. Kapitza Institute for Physical Problems RAS, Moscow, Russia

We report the first experiments with superfluid ^{3}He in "ordered" aerogel. This aerogel consists of Al_2O_3 strands which are nearly parallel to each other[1]. We observed two superfluid phases: low temperature phase and high temperature phase. NMR properties of the low temperature phase correspond to Balian-Werthamer order parameter. The origin of the high temperature phase is not yet clear. Spin susceptibility measurements show that this phase belongs to the family of equal spin pairing states. NMR properties of the low temperature phase qualitatively well correspond to both A phase in Larkin-Imry-Ma state and to polar phase, which is predicted to be more favorable for such a geometry. However, the absolute value of the NMR shift is less than it is expected for the pure polar phase, but greater than it should be for the A phase. It is possible that we observe the polar-like phase with the order parameter suppressed near the aerogel strands.

[1]R.Sh. Askhadullin, P.N. Martynov, P.A. Yudintsev *et al.*, J. of Physics: Conf. Ser., **98**, 072012 (2008).