Investigation of the Odd-Frequency Pairing in Liquid ^{3}He at Aerogel Interface

K. Kondo, Y. Morioka, Y. Kimura, C. Kato, K. Obara, H. Yano, O. Ishikawa, and T. Hata

Graduate School of Science, Osaka City University, Osaka, Japan

A novel feature of condensate state in liquid ^{3}He is predicted theoretically, which consists of odd-frequency spin triplet s-wave Cooper pairs[1]. Such a spin triplet s-wave state will appear inside aerogel near the surface contacting with superfluid ^{3}He-B. This novel state will show an enhancement of magnetization[2]. In order to detect this proximity effect, we made the interface in columnar glass tube, and set a saddle shape NMR coils on outside of the glass tube at the interface.We performed cw-NMR measurements at 22 bar. At 22 bar, we found that the superfluidity of ^{3}He in aerogel first appeared at the place away from the interface, but near the interface never appeared, even at considerably low temperatures. Moreover, we observed the enhancement of magnetization of liquid ^{3}He inside aerogel at 22 bar. In this poster, we will discuss whether the enhancement is caused by odd-frequency spin triplet s-wave Cooper pairs.

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Section: QF - Quantum Fluids

Keywords: superfluid ^{3}He, aerogel, NMR, proximity effect, odd-frequency Cooper pairs