

Developing Magnetic Resonance Spectroscopic Imaging ULTMRSI to study inhomogeneous texture in Superfluid ^3He

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A new class of technology in ULTMRI measurement to study inhomogeneous order parameter in superfluid ^3He is developed. Ordinary MRI measurement gives spin density distribution in the NMR sensing area. In combination with multiple-pulsed NMR measurement, one could also obtain spatial distribution of magnetization due to spin relaxation, spin diffusion, etc. Recently we succeeded in developing new measurement scheme, with which we can obtain spatial distribution of the resonance frequency shift. This new class of technology in MRI is named as ULTMRSI, which is the abbreviation of Ultra Low Temperature Magnetic Resonance Spectroscopic Imaging.

Thanks to this feature, we obtain a tool to observe real space image of the texture in superfluid ^3He . A capability of this new technology will be shown.

Section: TC - Techniques

Keywords: MRI, NMR, superfluid ^3He , texture