

Quasi-classical Theory of the A-phase of Superfluid $^3\text{He-A}$ in a Cylinder

K. Nagai

Graduate School of Integrated Arts and Sciences, Hiroshima University, Kagamiyama 1-7-1, Higashihiroshima, 739-8521 Japan

We develop a quasi-classical theory to study the A-phase texture with a coreless vortex like the Mermin-Ho texture in a cylinder. We consider both the cases of cylinder with specular surface and diffusive surface. In case of the difusive surface, we find a Mermin-Ho type texture at higher temperatures but with the order parameter suppressed near the surface. In the case of specular surface, however, we find a surface correction to the order parameter. The mass current distribution and the total angular momentum will be also discussed.

Section: QF - Quantum Fluids

Keywords: superfluid $^3\text{He-A}$, cylindrical vessel, Mermin-Ho texture, angular momentum