

Mermin-Ho Texture and Its Intrinsic Angular Momentum

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A Cooper pair of superfluid $^3\text{He-A}$ phase has a intrinsic angular momentum. The possibility of observing it has been continuously discussed. In this talk we discuss one of a observation scheme of it by utilizing a rotation of the system and a NMR measurement.

A Mermin-Ho texture is a ground state of a spatial order parameter configuration in a narrow cylinder. It possesses an intrinsic superflow angular momentum and also z-component of an intrinsic angular momentum. In the case of non-rotating frame, two types of energetically degenerated Mermin-Ho texture can be realized. The rotation of the frame lifts this degeneracy and gives deformation of the texture. The deformation depends on the angular momentum distribution of the texture. The deformation of the texture is detected by a spin wave NMR frequency. The resonance frequency is calculated by a finite element method in a Lagrangean formulation of NMR. The resonance frequency changes continuously depending on the rotation velocity of the system. The dependence of it shows an opposite behavior in two cases: one is intrinsic angular momentum is observable and the other is not observable. Therefore we can determine whether the angular momentum is observable or not.