

Atomic type magnon Bose-Einstein condensation in antiferromagnet

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Abstract

The Spin Supercurrent and Bose-Einstein condensation of magnons, similar to an atomic BEC, was observed in 1984 in superfluid $^3\text{He-B}$. The same phenomena should exist in solid magnetic systems. We describe here the first observation of magnon BEC in solid easy plane antiferromagnet CsMnF_3 . We have observed magnon BEC on a mode of coupled Nuclear-Electron precession. The dynamical properties of this mode have many similarities with NMR of superfluid $^3\text{He-A}$. The frequency changes with deflection of nuclear magnetization. Furthermore, the involvement of electron ordered subsystem gives the magnon-magnon interaction, spin waves and spin supercurrent, while the nuclear subsystem gives the relatively long time of relaxation.

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