

## Atomic type magnon Bose-Einstein condensation in antiferromagnet.

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The Spin Supercurrent and Bose-Einstein condensation of magnons similar to an atomic BEC was observed in 1984 in superfluid <sup>3</sup>He-B. The same phenomena should exist in solid magnetic systems. We report the first observation of magnon BEC in solid easy plane antiferromagnet CsMnF<sub>3</sub>. 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 <sup>3</sup>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. Our experiments were done at the temperature of 1.5 K at a frequency of 566 MHz. The line of CW NMR at small RF excitation corresponds to 325 mT field. If we increase the excitation and sweep down the field, the BEC states creates, nuclear magnetizations deflects and precess on the frequency of radiation. <sup>1</sup>

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