

Physical Review Letters 2012 vol.108 N18

Guiding and trapping of electron spin waves in atomic hydrogen gas

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Abstract

We present a high magnetic field study of electron spin waves in atomic hydrogen gas compressed to high densities of $\sim 10^{18} \text{cm}^{-3}$ at temperatures ranging from 0.26 to 0.6 K. We observed a variety of spin wave modes caused by the identical spin rotation effect with strong dependence on the spatial profile of the polarizing magnetic field. We demonstrate confinement of these modes in regions of strong magnetic field and manipulate their spatial distribution by changing the position of the field maximum. © 2012 American Physical Society.

<http://dx.doi.org/10.1103/PhysRevLett.108.185304>
