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SÉMINAIRE

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Free surface of superfluid ^3He studied with the 2D electron solid

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We performed conductivity measurements of the Wigner solid on the free surface of superfluid ^3He -A and B phases under magnetic fields. The ^3He -A phase has a nodal point of energy gap at North and South Poles of the Fermi sphere and is strongly anisotropic. A unit vector directing from the South Pole to the North Pole is referred to as the $\hat{\ell}$ vector. The $\hat{\ell}$ vector tends to align parallel to a surface normal. The conductivity of the Wigner solid is sensitive to the quasiparticle distribution, and hence, sensitive to the alignment of the $\hat{\ell}$ vector. Our observation confirmed the abovementioned picture of the $\hat{\ell}$ vector configuration. In the B-phase the situation is more subtle. Nevertheless, our observation gives a strong support for the present understanding of the magnetic-field-induced anisotropy of the B-phase.