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Anisotropic properties of superfluid ^{3}He near free surface studied by surface electrons KIMITOSHI KONO, HIROKI IKEGAMI, RIKEN, LOW TEMPERATURE PHYSICS LABORATORY, RIKEN TEAM — We performed conductivity measurements of the Wigner solid on the surface of superfluid ^{3}He-A and B phases under magnetic fields. The ^{3}He-A phase has a nodal point of energy gap at North and South Poles of the Fermi sphere and is anisotropic. A unit vector directing from the South Pole to the North Pole is refered to as the $\hat{\boldsymbol{\ell}}$ vector. The $\hat{\boldsymbol{\ell}}$ 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 $\hat{\boldsymbol{\ell}}$ vector. Our observation is in good agreement with the abovementioned picture of the $\hat{\boldsymbol{\ell}}$ vector alignment. 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.

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