

SUPERHEATCONDUCTIVITY AND ELECTRICAL ACTIVITY OF SUPERFLUID SYSTEMS

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The peculiar mechanism of thermopolarization in superfluid systems in a magnetic field is predicted. It is shown that in He-II in a magnetic field \mathbf{H} , the heat flux under the influence of the temperature gradient ∇T leads to the appearance of an electric field $\mathbf{E} \sim \mathbf{H} \times \nabla T$. The effect takes place in superfluid systems due to the presence of a property called superheatconductivity. The magnitude of the electric field substantially depends on the shape of the sample with helium and the direction of the magnetic field. It is shown that the effect should take place both stationary and nonstationary temperature gradients (when a second sound propagates). It can be said that the effect is analogous to the Nernst-Ettinghausen effect in conductors.