

## Unusual Resonances in Superfluid $^4\text{He}$ - metal Double-layer System

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In this report the model of temperature and heat flow evolution in the double-layer system is considered. The first layer is superfluid  $^4\text{He}$  and the second layer is metallic plate. At the left end of the first layer the oscillating heat source  $Q(t) = Q_0 \cos(\omega t)$  is situated. Temperature at the right end of the second layer is constant. Solution in the form of standing wave of these equations is explored. It was found that temperature odd resonances of unusual form and heat flow odd resonances appeared when the width of the metallic plate is much less than the length of the heat wave in it, and heat flow even resonances of unusual form and temperature even resonances appeared when the width of the metallic plate is much greater than the length of the heat wave. Analytical expressions for the width and amplitude of these resonances are obtained.