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High-frequency response of Josephson vortex lattice in layered superconductors[1] ALEXEI KOSHELEV, Argonne National Laboratory — Magnetic field applied along the layer direction of layered superconductors generates the Josephson vortex lattice. We studied response of this state to the high-frequency c-axis electric field. Numerically solving equations for the oscillating phases, we computed the frequency dependences of the loss function, $\mathrm{Im}[1/\epsilon(\omega)]$, at different magnetic fields, including regions of both dilute and dense Josephson vortex lattices. The main feature of the response is the Josephson-plasma-resonance peak. In the dilute-lattice regime this peak is displaced to slightly lower frequency. An interesting feature of the dilute regime is the appearance of satellites at the higher-frequency part, which are caused by excitation the plasma modes with the wave vectors set by the lattice structure. In the dense-lattice limit the plasma peak moves to higher frequency and its intensity rapidly decreases, in agreement with analytical theory. An additional broad peak exists at low frequencies, and can be described by phenomenological theory of vortex oscillations.

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