

Abstract Submitted  
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**Anomalous infrared monochromatic transmission through a film of type-II superconductor in magnetic field and a superconducting multiple conductor system** ROMAN YA. KEZERASHVILI, OLEG L. BERMAN, VLADIMIR S. BOYKO, New York City College of Technology, CUNY, YURII E. LOZOVIK, Institute of Spectroscopy — Anomalous far infrared monochromatic transmission through a lattice of Abrikosov vortices in a type-II superconducting film is found. The transmitted frequency corresponds to the photonic mode localized by the defects of the Abrikosov lattice. These defects are formed by extra vortices placed out of the nodes of the ideal Abrikosov lattice. The extra vortices can be pinned by crystal lattice defects of a superconductor. The frequency is studied as a function of magnetic field and temperature in the framework of the Dirac-type two-band model. The control of the transmitted frequency by varying magnetic field and/or temperature is analyzed. Besides, anomalous infrared monochromatic transmission through a superconducting multiple conductor system consisting of parallel superconducting cylinders is found. The transmitted frequency corresponds to the localized photonic mode in the forbidden photonic band, when one superconducting cylinder is removed from the node of the ideal two-dimensional lattice of superconducting cylinders. Our approach is valid for all type-II superconductors but the specific calculations have been performed for the YBCO film in the magnetic field and for the YBCO superconducting cylinders.

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