

ELECTROMAGNETIC AND PHONON MODES
FOR SUPERFLUID He⁴ WITH A DISK RESONATOR

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S u m m a r y

We find the distribution of the electromagnetic field inside and outside a dielectric disk resonator placed in He-II. It is shown that this field consists of a collection of “circular” (c-) photons. The wave function Ψ_c of a c-phonon for the He-II + disk system is calculated in the zero-order approximation in interaction. Due to the symmetry of the problem, the structure of Ψ_c is such that a c-phonon possesses, similarly to a c-photon of the resonator, a definite energy and an angular momentum with respect to the disk axis, but it does not possess a definite momentum in the disk plane.