

## **New Features of Exciton and Polariton Attenuation on the LA-phonons of Crystals**

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Study of exciton and polariton scattering by phonons is important for understanding number of optical and transport properties of condensed matter.

The analytical expressions for determination of the attenuation of the exciton of arbitrary radius in acoustical crystals are obtained as functions of the temperature of the crystal and the exciton velocity. The form of these dependencies is analyzed in detail for the limiting cases of high and low temperatures (including  $T=0$ ), slow and fast excitons, large and small exciton radii. Some of these expressions coincides in limited cases with the results obtained earlier.

Another expression is found for determination of the frequency and temperature dependencies of polariton damping in acoustical crystals for an arbitrary form of the coupling function between polaritons and acoustic phonons.

Both calculations are made for weak coupling in one-phonon approximation for the case of linear dependence of acoustic phonon energy on quasi-momentum.