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## **Electron Phonon Interaction In Low**

The electron-lattice interaction, i.e., the energy exchange between the electrons and lattice, is due to the radiation and adsorption of phonons and is known as the electron-phonon interaction. As the temperature is lowered, the amplitude of the ions becomes smaller, and the electrical resistance is reduced.

## **Electron Phonon Interactions - an overview |**

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Electron-phonon and phonon-phonon interactions in low-dimensional nanostructures. The electron-phonon interaction gives rise to a number of physically measurable quantities in solid state physics, perhaps most notably the heat capacity and the finite electrical resistivity in metals. The effect of extreme quantum confinement on the electron-phonon interaction is investigated for single-atom thick, infinitely long chains of metallic Al, Cu, Ag and Au atoms using density functional ...

## **Electron-phonon and phonon-phonon interactions in low**

...

The important role of a temperature dependent many-body effect due to electron-phonon interactions and spin fluctuations at low  $T$  has been seen in Lu and Sc (Swenson 1996). At high temperatures ( $T > \sim \theta_D / 2$ ) a description of  $\beta_{el}$  in terms of  $N(E_F)$  is sufficient, but then the total expansion coefficient is

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dominated by the phonon part  $\beta$  ph.

## **Electron-Phonon Interaction - an overview | ScienceDirect**

...

Low temperature magnetoresistance measurements in GaAs-GaAlAs heterojunctions with more than one occupied electric subband. Shubnikov-de Haas oscillations in perpendicular magnetic fields contain non-additive terms at electron temperatures  $> 2K$ , where acoustic phonon mediated inter-subband scattering is comparable to intra-subband scattering.

## **Electron-Phonon Interactions in Low-Dimensional Structures ...**

Electron-phonon interaction in low-dimensional structures /  
Published: (2003) Strong effects of ...

## **Staff View: Electron-phonon interactions in low ...**

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The low temperature electron-phonon interaction is also an elementary process for several other phenomena and applications. The electron-phonon interaction determines the cooling time of the electron gas, if the electrons are not cooled by out diffusion (see Chapter 2).

## **Low Temperature Electron-Phonon Interaction in Disordered ...**

We study theoretically the electron-phonon interaction in  $\text{Na}_x\text{CoO}_2$ . For the  $A_{1g}$  and  $E_{1g}$  phonon modes found in Raman experiments, we calculate the matrix elements of the electron-phonon interaction. Analyzing the feedback effect of the conduction electrons on the phonon frequency  $\omega$ , we investigate the doping dependence of these two phonon modes.

## **Electron-Phonon Interaction and Phonon Renormalization in ...**

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Compared with traditional dislocation scattering studies, which are intrinsically single-particle, low-order perturbation and classical quenched defect in nature, the dislon theory not only allows easy incorporation of quantum many-body effects such as electron correlation, electron-phonon interaction, and higher-order scattering events, but ...

## **Theory of electron-phonon-dislon interacting system—toward ...**

Highly polar materials are usually preferred over weakly polar ones to study strong electron-phonon interactions and its fascinating properties. Here, we report on the achievement of simultaneous confinement of charge carriers and phonons at the vicinity of a 2D vertical homovalent singularity (antiphase boundary, (APB)) in an (In, Ga)P/SiGe/Si sample. The impact of the electron-phonon ...

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## **Strong Electron-Phonon Interaction in 2D Vertical ...**

The phonon mode-resolved Fourier maps introduced in the present work allow in a very direct and intuitive manner for an electron-band selective view onto electron-phonon interaction processes ...

## **Mode-resolved reciprocal space mapping of electron-phonon ...**

Resonance Raman spectra and deformation potential analysis show that strong electron-phonon interactions result in fast non-radiative decay, and that this lowers the photoluminescence quantum yield...

## **Electron-phonon interaction in efficient perovskite blue**

...

Holstein model is as follows: at low densities individual electrons distort the lattice sites in their vicinity. The resulting composite

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particle, a 'polaron', possesses an increased effective mass, reflecting the fact that when the electron hops between sites, the oscillator degrees of freedom must reconfigure themselves[35–39]. These

## **Electron-Phonon Interactions in Flat Band Systems**

Hamilton operator including electron-electron, electron-phonon, and electron-photon interactions is transformed into an excitonic basis resulting in an excitonic Hamiltonian<sup>40</sup>. We focus on low-density conditions, where exciton-exciton interaction is negligible<sup>10,20</sup>. The central part of our work lies in the exciton-phonon interac-

## **Phonon-assisted Exciton Dissociation in Transition Metal**

...

The rigorous quantum mechanical explanation shows that the effect is due to electron-phonon interactions, with the phonon



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being the collective motion of the positively-charged lattice. The energy of the pairing interaction is quite weak, of the order of 10 –3 eV, and thermal energy can easily break the pairs. So only at low temperatures, in ...

## **Cooper pair - Wikipedia**

Low-Temperature Electron-Phonon Interaction of Quantum Emitters in Hexagonal Boron Nitride. Gabriele Grosso\* Gabriele Grosso. Photonics Initiative, Advanced Science Research Center, City University of New York, New York, New York, United States.

## **Low-Temperature Electron-Phonon Interaction of Quantum ...**

Electron-phonon and phonon-phonon interaction mechanisms are discussed for bulk semiconductors as well as low-dimensional structures.

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## **Phonons and Electron-Phonon Interaction in Low-Dimensional ...**

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Electron-Phonon Interactions in Low-Dimensional Structures Lawrence Challis Abstract. The study of electrons and holes confined to two, one, and even zero dimensions has uncovered a rich variety of new physics and applications. This book describes the interaction between these confined carriers and the optic and acoustic phonons within and ...

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