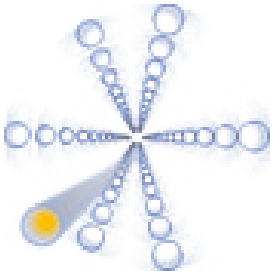

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PS1-18: Continuous Potentials of Crystallographic Axes for a Series of Single Crystals

Monday, 6 October 2014 17:00 (1h 30m)

A two-dimensional periodic (the so-called continuous) potential … is studied, that is obtained by replacing the true potential of a single crystal by the potential averaged (i) over all atomic chains, which are parallel to the selected crystallographic axis of a single crystal, and (ii) over the thermal vibrations of atomic cores of the single crystal: …=… (Z-axis of the cylindrical coordinate system …=… is parallel to the selected crystallographic axis).

The numerical results for different crystallographic axes of a series of single crystals (silicon, quartz, lithium niobate, etc.) are given in the form of tables, graphs, as well as analytical expressions (in which the deviation of … from axial symmetry is taken into account). For evaluation of the accuracy of obtained results in numerical calculations different familiar approximations for the potentials of atomic cores of single crystal have been used. The obtained results are compared with previously made corresponding calculations (see, e.g.. [1-5]).

The obtained results may be used for investigation of the effect of the single crystal on high energy electromagnetic processes (e.g., the radiation from relativistic electrons and positrons axially channeled in single crystals [1-5]).

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