

Long-Range Effects on the Pyroelectric Coefficient of Ferroelectric Superlattice

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(Received: 2002-4-3; Revised:)

Abstract: Long-range effects on the pyroelectric coefficient of a ferroelectric superlattice consisting of two different ferroelectric materials are investigated based on the transverse Ising model. The effects of the interfacial coupling and the thickness of one period on the pyroelectric coefficient of the ferroelectric superlattice are studied by taking into account the long-range interaction. It is found that with the increase of the strength of the long-range interaction, the pyroelectric coefficient decreases when the temperature is lower than the phase transition temperature; the number of the pyroelectric peaks decreases gradually and the phase transition temperature increases. It is also found that with the decrease of the interfacial coupling and the thickness of one period, the phase transition temperature and the number of the pyroelectric peaks decrease.

PACS: 77.80.-e, 77.70.+a, 77.80.Bh

Key words: long-range interaction, ferroelectric superlattice, pyroelectric coefficient

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