



Семинар
«МАЛОЧАСТИЧНЫЕ СИСТЕМЫ»
вторник, 1 ноября 2016 г., 11:00
аудитория им. Д.И.Блохинцева (IV этаж)

TUNNELING OF TWO BOSONIC ATOMS FROM A ONE-DIMENSIONAL ANHARMONIC TRAP

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We have investigated the spectrum of two bosonic atoms confined by one-dimensional anharmonic trap. The tunneling rates of such a system from the ground ($n = N = 0$) and excited states with respect to relative ($n = 2, N = 0$) and center-of-mass ($n = 0, N = 2$) motions are calculated. We have found that the only possible tunneling scenario for these excited states is a sequential particle tunneling. The dependence of the tunneling rate on the strength of the interatomic interaction g and the initial population was calculated. The tunneling rate is a measurable parameter giving information about internal dynamics of the confined atoms in optical traps and can be used for planning and analysis of experiments in this field. Special investigation was performed near the point of the spectrum rearrangement $(2, 0) \rightleftharpoons (0, 2)$ in the limit of noninteracting atoms ($g = 0$).