

DISCRETE 2014: Fourth Symposium on Prospects in the Physics of Discrete Symmetries



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Subtleties in the BaBar measurement of time-reversal violation

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A first measurement of T asymmetries that are not also CP asymmetries has been recently achieved by the BaBar collaboration. We analyze the measured asymmetries in the presence of direct CP violation, CPT violation, wrong strangeness decays and wrong sign semileptonic decays. We introduce parameters that have well-defined transformation properties under CP, T and CPT, and identify contributions to the measured asymmetries that are T conserving. We explain why, in order that the measured asymmetries would be purely odd under time-reversal, there is no need to assume the absence of direct CP violation. Instead, one needs to assume (i) the absence of CPT violation in strangeness changing decays, and (ii) the absence of wrong sign decays.

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