

Abstract Submitted  
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**NMR Observation of Impurity-Pair Ordering in Weakly Disordered Solid Solutions**<sup>1</sup> DAVID AILION, University of Utah, Department of Physics, BOSTJAN ZALAR, ANDRIJA LEBAR, J. Stefan Institute, Ljubljana, Slovenia — Breaking of the average cubic symmetry in Li-doped potassium tantalate ( $K_{1-x}Li_xTaO_3$ ) was observed with quadrupole-perturbed  $^7Li$ NMR at temperatures (150-400 K) far above the nominal glass transition temperature (80 K). The observed spectrum consists of contributions from both isolated Li ions (i.e., with no nearest neighbor Li) and from Li pairs. The isolated Li ions move among six equivalent off-center sites in a potential having cubic symmetry. These have zero average electric-field gradient and, hence, exhibit no quadrupole splitting. In addition, very low intensity, but well resolved, quadrupole satellites having a temperature-dependent splitting were observed. This splitting indicates that the various Li pair configurations are not all equally probable. These are the first observations of biased Li-ion ordering that persists in the paraelectric phase at temperatures high above the glass phase.

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