

Abstract Submitted  
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**Debye Relaxations, Fano Resonances and Heterophase Oscillations in the Relaxor  $K_{1-x}Li_xTaO_3$** <sup>1</sup> JEAN TOULOUSE, LING CAI, Lehigh University, RADHA PATTNAIK, Lafayette College, LYNN BOATNER, Oak Ridge National Laboratory — Besides characteristic dielectric relaxations, relaxor ferroelectrics have also been shown to exhibit strong resonances. These resonances are related to the ubiquitous presence of polar nanodomains in relaxors in their “paraelectric” phase below a certain temperature  $T^*$ . In the relaxor  $K_{1-x}Li_xTaO_3$  (KLT), the dielectric spectrum reveals pairs of coupled resonances with a Fano-type line shape that evolves dramatically with temperature. At higher temperature, the line shape reflects the close interplay between relaxations and resonances. Near the phase transition, it reveals the existence of coherent heterophase fluctuations. KLT provides a good example of the multiscale dynamics (from nano to macro) that is intrinsic to relaxors.

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Jean Toulouse  
Lehigh University

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