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**Phonon-based Mechanisms for Structural Transformations in Pu**  
TURAB LOOKMAN, AVADH SAXENA, ROBERT ALBERS, Los Alamos National Laboratory — Plutonium undergoes a number of transformations that involve changes in unit cell shape and numbers of atoms. We focus on the fcc to monoclinic  $\delta \rightarrow \alpha'$  transformation and suggest displacive mechanisms that can describe the transformation. We also explore signatures of the mechanisms in phonon dispersion curves and present a phase diagram in parameter space. The implications for the  $\beta \rightarrow \alpha$  transformation, assuming a displacive mechanism, will also be explored.

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