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Chapman-Jouguet Detonation for an Isomerization Reaction OSMAR AGUIRRE, Colorado University, DAVID DUNLAP, University of New Mexico — A detonation wave is a chemically-sustained shock wave, driven by the adiabatic expansion accompanying the exothermic transformation of a gaseous mixture, from reactants A to products B. The simplest illustration of the classical 1905 Chapman-Jouguet (CJ) theory of detonation that includes both chemical and mechanical processes is that of an ideal gas undergoing a hypothetical isomerization reaction. In such a case, the reaction A→B describes a change in molecular conformation that is accompanied by the release of heat. In this talk we will use an isomerization reaction model as a platform from which to examine the long-standing controversy surrounding the thermodynamic stability of the CJ solution.

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