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# On Modeling the Longitudial Impact of Two Shape Memory Bars

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We study the propagation of phase transformation fronts induced by the longitudinal impact of two shape memory bars. The corresponding wave structure is investigated by using the non-monotone elastic model versus a Maxwell's rate-type model containing a rate sensitivity parameter and a time of relaxation of kinetic origin. We focus on the numerical results which can be compared with experimental data: the time of separation (optical methods), the velocity at the end of the target bar (interferometry), the stress at the impacted end (piezoelectric wafers), the variation in time of the strain at various cross-sections (diffraction gratings). We put into evidence how an experimental investigation on the influence of the impact velocity on the time of separation of the bars and on the velocity time profiles at the free end of the target could clarify some aspects connected with the dynamic nucleation of phases.

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