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# Oscillatory configurational forces

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## Abstract

Eshelby introduced the concept of configurational forces to motivate the change in the defects position within a solid [3]. Over the last decade, this framework has been extended to the mechanics of structures by showing that frictionless sliding sleeves may provide at their exit an ‘Eshelby-like’ force parallel to the sliding direction [1, 2]. The effect of oscillatory configurational forces is analyzed during the fall of a rod constrained by a sliding sleeve subject to a periodic motion. Time evolution of the system is achieved through numerical integration by means of an in-house Finite Element solver. The dynamic response can be distinguished in three qualitatively different behaviours: (i.) a final complete injection; (ii.) a final complete transverse ejection; and, unexpectedly, (iii.) a steady small amplitude oscillation in the absence of a final injection or ejection of the rod.

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