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Supplementary Materials for

The equation of motion for supershear frictional rupture fronts

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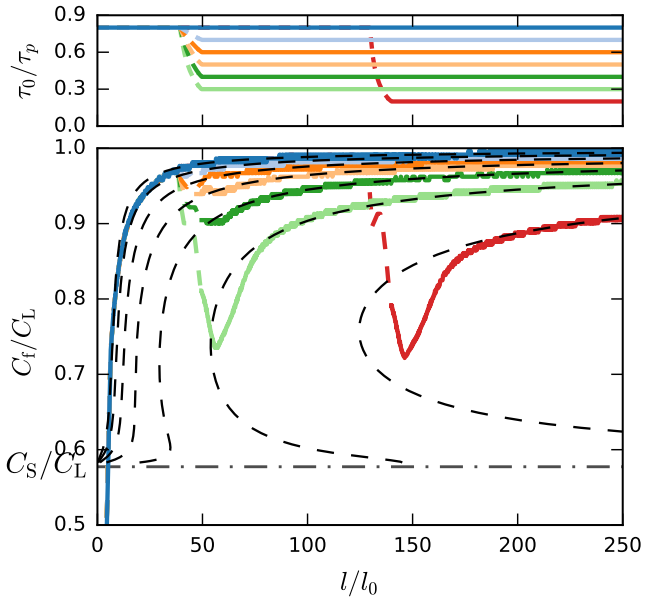

Fig. S1. Comparison of theoretical predictions of supershear crack velocities with numerical simulations for various shear strength levels for $\nu = 0.25$ (plain strain). (top) Spatially uniform τ_0 and non-uniform τ_p profiles are considered. The imposed τ_0/τ_p profiles are shown. (bottom) Colors represent the crack velocities $C_f(l)$ corresponding to the stress profiles in (top). A weak nucleation patch ($\tau_0/\tau_p = 0.8$ region in (top)) was used to trigger direct supershear transitions. Subsequently, cracks enter stronger interfacial regions $0.2 \leq \tau_0/\tau_p \leq 0.8$ (the transition regions are denoted by dashed lines). Theoretical predictions in the strong regions, are denoted by black dashed lines. Note that the strengthening zone for $\tau_0/\tau_p = 0.2$ (red example) is located at a larger propagation distance. This Figure is analogous to Fig. 2 in the main text in which $\nu = 0.35$.