A qualitative model for detonation with losses ASLAN KASIMOV, LUIZ FARIA, KAUST — Burgers equation with a nonlocal forcing is capable of qualitatively reproducing many dynamical characteristics of unstable detonations. We extend previous work on the model to account for generic energy losses. A new approach is proposed for solving the nonlinear eigenvalue problem associated with the steady (or quasi-steady) detonation speed. The method eliminates difficulties associated with the sonic-point singularity and allows for easy and accurate numerical solution of the problem. We explore the role of curvature or friction in the stability of a steady detonation solution and contrast our results with analogous results in the reactive Euler equations.

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