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Fronts in a model for gasless combustion with heat loss.

We consider a model of gasless combustion with heat loss, with the heat loss from the system to the environment modeled according to Newton's law of cooling. For the regime when the system contains two small parameters, a diffusion coefficient for the fuel and a heat loss parameter, we use geometric singular perturbation theory to show existence of traveling combustion fronts. We also study their spectral and nonlinear stability. (Received August 20, 2012)