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**Peter Gordon, Chris Jones and Anna Ghazaryan\*** (ghazaryan@niss.org), Department of Mathematics, University of North Carolina at Chapel Hill, CB 3250, Phillips Hall, Chapel Hill, NC 27599. *On subsonic detonation waves in inert porous medium*. Preliminary report.

Sivashinsky's model of subsonic detonation describes the propagation of combustion fronts in highly resistable media. The combustion front is described by a traveling wave solution of the corresponding system of equations. It is known that there exists a traveling wave asymptotically connecting the unburnt and burnt states, which is unique if thermal diffusivity is neglected as shown by Gordon, Kamin and Sivashinsky. The question of whether the wave is unique in the presence of thermal diffusivity has remained open. We resolve this issue through applying geometric singular perturbation theory. (Received February 14, 2006)