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Barbara Lee Keyfitz* (bkeyfitz@math.ohio-state.edu), Department of Mathematics, The Ohio State University, Columbus, OH 43210. *Approaching a transonic flow problem with Fourier transforms.*

Recent work by the speaker and co-authors points to open questions involving continuous solutions at a sonic line in steady or quasi-steady transonic flow. This has motivated the formulation of a very simple perturbation problem for the steady transonic small disturbance equation. One class of solutions will be presented here. These solutions can be found using the hodograph transform followed by a partial Fourier transform. We obtain both existence and non-existence results which appear somewhat surprising. (Received January 26, 2010)