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TRANSONIC FLOWS WITH SHOCK AND DEGENERATE FREE BOUNDARIES ¹

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Abstract: In this talk, I will present some recent studies on multi-dimensional steady compressible transonic flows which may contain either shocks or sonic states (degenerate free boundaries). The governing systems for such problems are mixed or change-type with high degeneracies. The emphasize will be on the transonic shock problem in general multi-dimensional nozzles due to Courant-Friedriches and subsonic flows accelerating to sonic state exit in the straight converging nozzle. We will also present some results on the limiting subsonic-sonic flows in general infinitely long nozzles.

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