Global ill-posedness for compressible isentropic Euler system

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We consider the isentropic compressible Euler system in 2 space dimensions with pressure law $p(\rho) = \rho^2$ and we show the existence of classical Riemann data, i.e. pure jump discontinuities across a line, for which there are infinitely many admissible bounded weak solutions (bounded away from the void). We also show that some of these Riemann data are generated by a 1-dimensional compression wave: our theorem leads therefore to Lipschitz initial data for which there are infinitely many global bounded admissible weak solutions.

References

[1] *E. Chiodaroli, C. De Lellis, O. Kreml*: Global ill-posedness of the isentropic system of gas dynamics. Submitted (2013).