Uniqueness of shock waves under small L^∞ perturbations for the isentropic Euler equations

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We consider bounded entropy solutions of the isentropic Euler equations with $\gamma = 3$ and show weak solutions of this type possess some unconditional regularity in the form of strong traces. Combined with the relative entropy method, we are able to show uniqueness for small shocks under small perturbations, but without any regularity assumptions on the perturbed solution. This result provides a new limit on the possible types of solutions constructible by convex integration techniques.

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