

Non-uniqueness results for entropy solutions to the compressible Euler system

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The deceptively simple-looking compressible Euler equations of gas dynamics have a long history of important contributions over more than two centuries. If we allow for discontinuous solutions, uniqueness and stability are lost. In order to restore such properties, further restrictions on weak solutions have been proposed in the form of entropy inequalities. In this talk we will first discuss a counterexample to the well-posedness of entropy solutions to the multi-dimensional compressible Euler equations (see [1]): there exist *wild initial data* allowing for infinitely many distinct entropy solutions. Moreover, we will show a surprising fact (see [2]): in the two dimensional case, classical Riemann data can fall in the class of *wild initial data*. Our methods are inspired by a new analysis of the incompressible Euler equations recently carried out by De Lellis and Székelyhidi in [3]-[4] and based on a revisited "h-principle".

REFERENCES

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