**Jared Speck**

## The structure of the maximal development in 3D compressible Euler flow

I will discuss my works with L. Abbrescia on 3D compressible Euler flow, in which we reveal the structure of the maximal development for open sets of initial data without symmetry, irrotationality, or isentropicity assumptions. In particular, we describe the full structure of the singular set, where the solution's gradient blows up in a shock singularity, as well as the emergence of a Cauchy horizon from the singularity. Our work builds on Christodoulou's breakthrough monographs on irrotational solutions and my prior works with J. Luk, which revealed a portion of the singular set. The key new ingredients are rough foliations of spacetime adapted to the shape of the boundary and a geo analytic framework that yields suitable estimates on the foliations. Time permitting, I will discuss some of the many open problems in the field.