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Princeton, NJ 08544. *Finite-time singularity formation for the Boussinesq system.*

We consider the 2D Boussinesq system on sectors with angle less than π , and show that there exists Lipschitz continuous velocity field and density pair (u_0, ρ_0) which becomes singular in finite time. The initial data can be compactly supported and in particular the solution has finite energy. The proof consists of three parts: local well-posedness for the Boussinesq equation in critical spaces, the analysis of exactly scale-invariant solutions, and finally a cut-off argument. Moreover, when the angle of the sector is less than $\pi/2$, we show that the singularity can occur for C^∞ and compactly supported initial data. We remark that the 2D Euler equation is globally well-posed in all of these situations, so that the singularity is not coming from the domain or the lack of smoothness on the data. We then discuss implications of these results to the issue of singularity formation for the 3D Euler equations in the axisymmetric geometry. (Received September 08, 2017)