1167-76-265   **Gung-Min Gie**, **James P Kelliher*** (`kelliher@math.ucr.edu`) and **Anna L Mazzucato**.
Well-posedness and regularity of solutions to the 3D Euler equations with inflow, outflow. Preliminary report.

The 3D incompressible Euler equations in a bounded domain are most often supplemented with impermeable boundary conditions, which constrain the fluid to neither enter nor leave the domain. In 1983, Antontsev, Kazhikhov, and Monakhov published a proof of the existence and uniqueness of solutions to the Euler equations in which on certain inflow boundary components fluid is forced into the domain while on other outflow components fluid is drawn out of the domain. We extend their result to multiply connected domains and establish compatibility conditions on the initial data that allow higher regularity solutions, addressing an open issue in the literature. (Received March 08, 2021)