

# On the Strong Convergence of the Approximate Solutions for the 3-D Steady Euler Equations with Axial-Symmetry

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*Abstract:* In this talk, we are concerned with the convergence properties of the approximate solutions for the three-dimensional steady Euler equations with axial symmetry. Making use of the special structure of the equations for axisymmetric flows and special test functions, we obtain a strong convergence criterion for the approximate solutions. We additionally obtain that if the approximate solutions have only one single-point concentration outside the symmetry axis in  $(r, z)$ -plane, then the concentration point neither appears in the region near the axis nor appears in the region far away from the axis. Finally, to construct more interesting approximate solutions, we present some examples of vortex rings, which are assumed to be the steady solutions of the three-dimensional Euler equations with axial symmetry.