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**Thomas Y Hou** (hou@cms.caltech.edu), **Tianling Jin** and **Pengfei Liu\***  
(p11iu@caltech.edu). *POTENTIAL SINGULARITY FOR A FAMILY OF MODELS OF THE  
AXISYMMETRIC INCOMPRESSIBLE FLOW.*

We study a family of models for the incompressible axisymmetric Euler and Navier-Stokes equations. The models are derived by changing the strength of the convection terms in the equations written using a set of transformed variables. The models share several regularity results with the Euler and Navier-Stokes equations, including an energy identity, the BKM criterion and the Prodi-Serrin criterion. The inviscid models with weak convection are numerically observed to develop stable self-similar singularity with the singular region traveling along the symmetric axis, and such singularity scenario does not seem to persist for strong convection. (Received July 19, 2017)