

Abstract Submitted  
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**Non-homogeneous axisymmetric models of self-gravitating systems: the numerical matching** ALONSO SEPULVEDA, CHRISTIAN CHERUBINI, SIMONETTA FILIPPI, REMO RUFFINI, JORGE IVÁN ZULUAGA CALLEJAS, Universidad de Antioquia — Non homogeneous axisymmetric models of self-gravitating systems are discussed by using functional methods and numerical techniques. More in detail, in a reference frame, rotating with constant angular velocity  $\Omega$ , a self-gravitating incompressible fluid, in steady state is considered. In particular the internal velocity field has flow lines normal to the global angular velocity. Deriving a generalized Lane-Emden equation and using a procedure inspired by the method of Eriguchi-Muller, for selected velocity profiles, a sequence of equilibrium configurations is found and discussed.

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