Patryk Mach
Jagiellonian University

Newtonian self-gravitating disks revisited

Authors: P. Mach, E. Malec, W. Simon

Recent analytic results on self-gravitating gaseous disks in Newtonian theory are discussed. We start with a Sobolev bound on the disk mass. Next, we give a theorem that forbids infinitely extended configurations of rotating self-gravitating fluids, depending on the assumed equation of state and the rotation law. This part extends former results valid for the static case that were obtained both in General Relativity and in Newtonian theory. Finally, we reformulate the virial theorem in order to allow for a singular point-mass potential of the central object and radiation transfer in the disk. Some applications of this new version are discussed.