Post Core Collapse Evolution of Rotating Stellar Systems

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While dynamical evolution of non-rotating stellar systems is well understood through many studies, dynamical evolution of rotating stellar systems, especially during the post core collapse phase, is still little known. We have investigated the post core collapse evolution of initially rotating equal-mass stellar systems, using the numerical solution of an orbit--averaged 2D Fokker-Planck equation. The initial models were constructed using rotating King models. Three-body binary heating source was included to follow post core collapse evolution. The collapse times of models without rotation we derived are in good agreement with those of 1D Fokker-Planck models. The rotation accelerates core collapse, which was already found by Einsel & Spurzem (1999, MN, 302, 81). The acceleration takes place not only for the core collapse time, but also for the further mass loss and dissolution of the tidally bounded stellar system in post core collapse phase. Although the rotation in the core is greatly reduced in core collapse, a significant amount of rotation is still retained at radii around the half-mass radius. It is found that a significant amount of rotation retained in post-collapse phase is responsible for the continued acceleration of evolution for tidally bounded stellar system.