

NCAC Annual Meeting 2024

Mirek Giersz

Nicolaus Copernicus Astronomical Center, Polish Academy of Sciences
Warsaw, Poland
mig@camk.edu.pl

NCAC
31 January 2024



MOCCA UPGRADES and COLLABORATION PROJECTS

Last year was mostly spent on fighting with the MOCCA code after major upgrade connected with MSP, dissipative dynamical processes and stellar/binary evolution.

While working on the MOCCA code, we also participated in many joint projects, which resulted in **3** peer-reviewed publications, **2** in the process of reviewing and **3** in the process of preparation for submission.

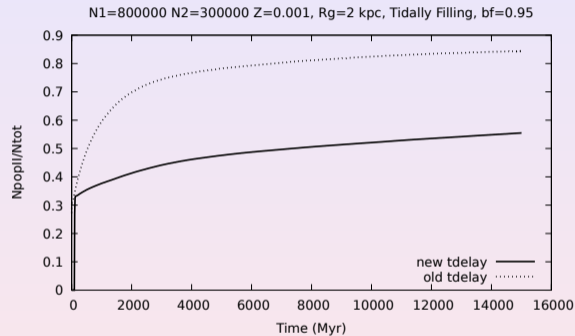
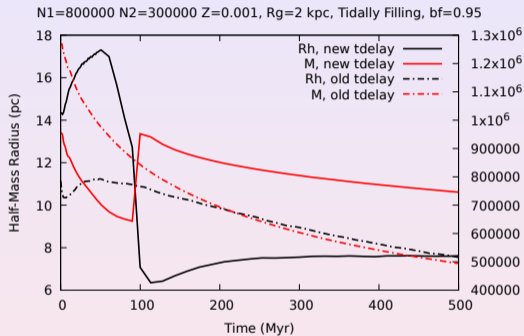
IT WAS NOT A VERY GOOD YEAR SCIENTIFICALLY !

Group was and still is involved in the following projects

- evolution of star clusters with Multiple Stellar Populations;
- compact binaries in star clusters
- formation of very massive stars in dense star clusters;
- dynamical processes leading to IMBH formation in star clusters;
- scattering experiments for many-body interactions with dissipative processes;
- Intermediate Mass Ratio Inspirals;
- WD-WD binaries in star clusters as a source of GW radiation.



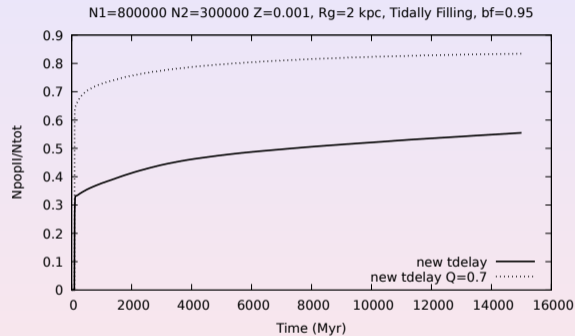
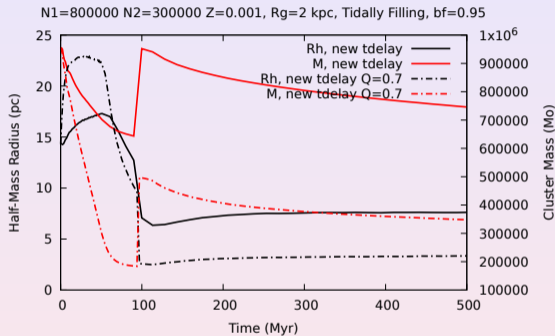
Adding Pristine Gas



Adding gas to the first population the cluster decreases its size, increases its mass, and substantially reduces the ratio between the Pop2 and the total number of objects



Adding Pristine Gas, Lack of Virial Equilibrium



A cluster that is initially not in virial equilibrium (**HOT**) expands stronger, loses more mass and has larger ratio between the Pop2 and the total number of objects