Installation

To compile the code, just type:

make

in the directory. This will create a executable file with name 'mcluster'.
In order to rebuild the whole code from scratch just re-type:

make clean; make

in the console.

Creating initial conditions

To generate the initial conditions, mcluster.ini and jeans_solutions files have to been placed in the same directory of the mcluster executable.

To execute, type in the console:

./mcluster

The option $output = 0$, will create two files: single_nbody.dat and binary_nbody.dat. The structure of those files are:

- single - mass [$M_\odot$], x, y, z, Vx, Vy, Vz [N-body units], age, metallicty, index of the population
- binary - e, a [log10(Ro)], m1 [$M_\odot$], m2 [$M_\odot$], x, y, z, Vx, Vy, Vz [binary center of mass, N-body units], age, metallicity, index of the population

The first line contains:

- the scaling factors for virial ratio (sx, sv),
- the conversion from physical unit to Nbody (rvir),
- half mass radius in pc (Rhtot),
- rtide in Nbody units (rtide/rvir)

Instead, the option $output = 1$ will generate a dat.10 file. The structure of the file is:

- binaries in the beginning of the file, i.e. $2 \cdot NBIN$ lines with the binary individual masses, positions and velocities in the cluster frame
- remaining single star lines, with mass, positions and velocities in the cluster frame pf the single star
- All the data are in NBody units

Initial conditions parameters

The initial condition parameters are set in 'mcluster.ini' file.

It is possible to create up to 10 different stellar populations.

The different properties for each population are separeted by commas. In order to generate more than one stellar population, give more than one value to the 'n' parameter. For example, to generate two stellar population with n1 = 1000000 and n2 = 500000, with binary fraction fb1 = 0.2 and fb2 = 0.9, set the parameter as:

n = 1000000, 500000
fracb = 0.2, 0.9

N.B.: If only one stellar population is going to be created, it is not necessary to delete all the properties for the second population (apart from "n" one). So, in order to generate one stellar population with n = 1000000 and binary fraction fb1 = 0.2, it is possible to set the parameter as:

n = 1000000
fracb = 0.2, 0.9