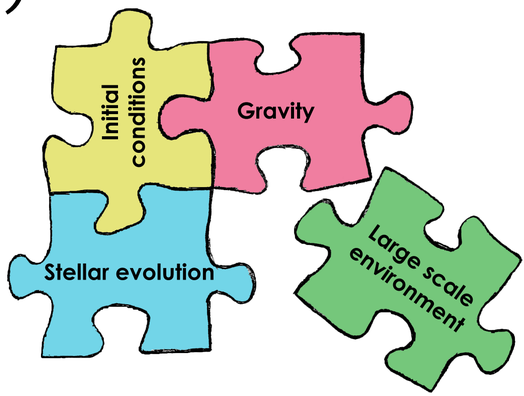
AMUSE

- Astrophysical Multipurpose Software Environment (Portegies Zwart et al. 2009)
- Gravitational Dynamics, Stellar Evolution, Gas Dynamics, Radiative Transfer
- Free to use, download at http://amusecode.org or https://github.com/amusecode/amuse



AMUSE

- Python-based interface to community simulation codes
- Uses a unit system: no manual conversions needed, adding distances to masses is impossible
- Easily switch between codes within same domain

AMUSE example

```
1  from amuse.lab import *
2
3  N_particles    = 1024
4  cluster_radius = 1     | units.parsec
5  particle_mass  = 1     | units.MSun
6  cluster_mass   = N_particles * particle_mass
7  evolve_time    = 10    | units.Myr
8
9  converter = nbody_system.nbody_to_si(cluster_mass,cluster_radius)
10
11 cluster = new_plummer_model(N_particles,convert_nbody=converter)
12
13 gravity = Bonsai(converter)
14 gravity.particles.add_particles(cluster)
15
16 gravity.evolve_model(evolve_time)
```

Why AMUSE instead of directly using a code

- AMUSE has a common interface to all codes, simplifies writing scripts
- Allows direct comparison between codes
- Combine codes from different (or the same) domains
- Rapid prototyping!

Today's work

- **MASC** (https://github.com/rieder/masc): Make A Star Cluster

- GUI to create a star cluster with choice of:
  - number of stars
  - initial mass function
  - star distribution
  - metallicity
  - size
  - age
  - binaries