**Galactic Cannibals**

Use JavaLab’s “Cannibals” applet (<http://burro.astr.cwru.edu/JavaLab/>) to explore howthe evolution of a galaxy’s satellite depend on different parameters of the interaction. (To make the applet run fast, keep "stars" off for most of the tests.) First, run the "default" interaction:

* + Satellite mass 10% of the disk mass.
  + Satellite scale radius 0.5 kpc
  + Orbital inclination 45o
  + R(peri)=25.0 kpc (closest approach distance), Rapo=10.0 kpc (greatest separation distance)

How long does it take for the satellite to fall to the center of the galaxy? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

What percentage of the mass is stripped away from the satellite as it falls inwards? \_\_\_\_\_\_\_\_

Explore how changing the mass distribution in the satellite changes the infall time and the amount of mass stripped. Change the mass of the satellite to 1% of the central galaxy’s mass. Record the infall time and percentage of stripped mass.

Infall time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ % of mass lost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reset the mass to 10% of the central galaxy and change the satellite radius to 2 kpc. Record the infall time and amount of stripped mass.

Infall time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ % of mass lost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Pick a circular orbit. Set R(apo) = R(peri) = 35 kpc. Set the mass to 10% and the satellite radius to 0.5 kpc.

Infall time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ % of mass lost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Set R(apo) = R(peri) = 10 kpc and vary the inclination angle. Set the inclination angle to 0 degrees (the satellite orbits in the plane of the disk of the central galaxy).

Infall time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ % of mass lost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Change the inclination to 90 degrees (the satellite orbits perpendicular to the plane of the central galaxy).

Infall time \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ % of mass lost \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Now, turn on stars (set the number of stars to 500). The simulation will run much more slowly. **Describe what happens to the stars that are lost from the satellite galaxy.**