Summer Research: Hypervelocity Globular Cluster

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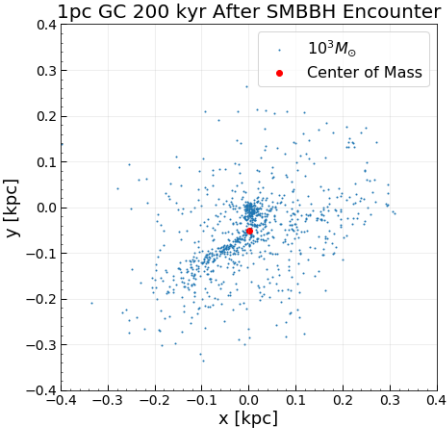
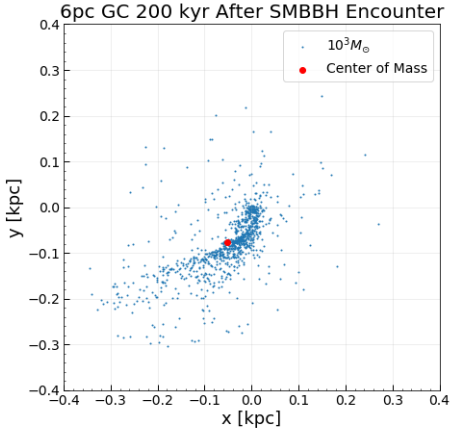
HVGC-1 Radial and Tangential Velocity

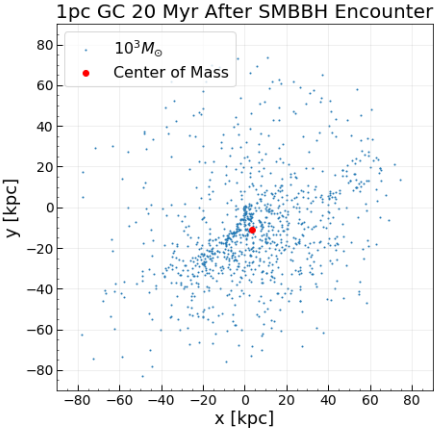
- HVGC-1 observed to have 2300 km/s radial velocity towards earth.
- Tangentially removed from M87 by 85 kpc.
- Must have some tangential velocity component (probably small compared to radial velocity less the object is more extraordinary than it already is).
- Tangential velocity determines how long HVGC-1 has been traveling. We are limited here as M87 is 16.4 Mpc away and observations assumed HVGC-1 was also 16 Mpc away.

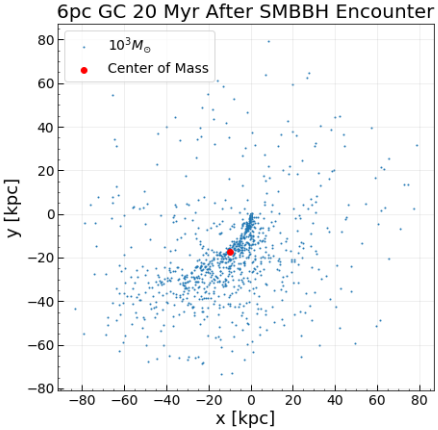
Necessary Ejection Velocities



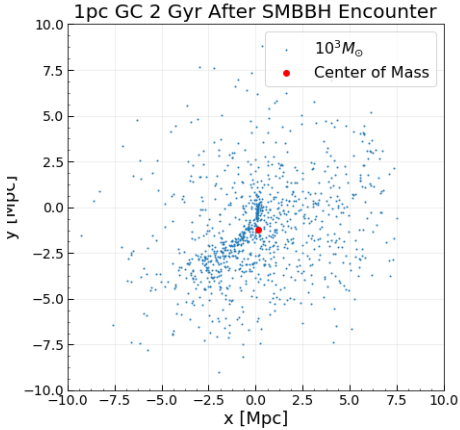


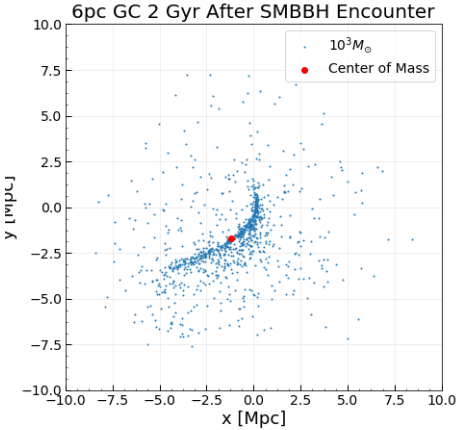
Necessary Ejection Velocities





Necessary Ejection Velocities





Backup Slides

3:1 Mass ratio

- 2-3 pc pass from larger BH.
- Tidal radius of 0.3-0.4 pc