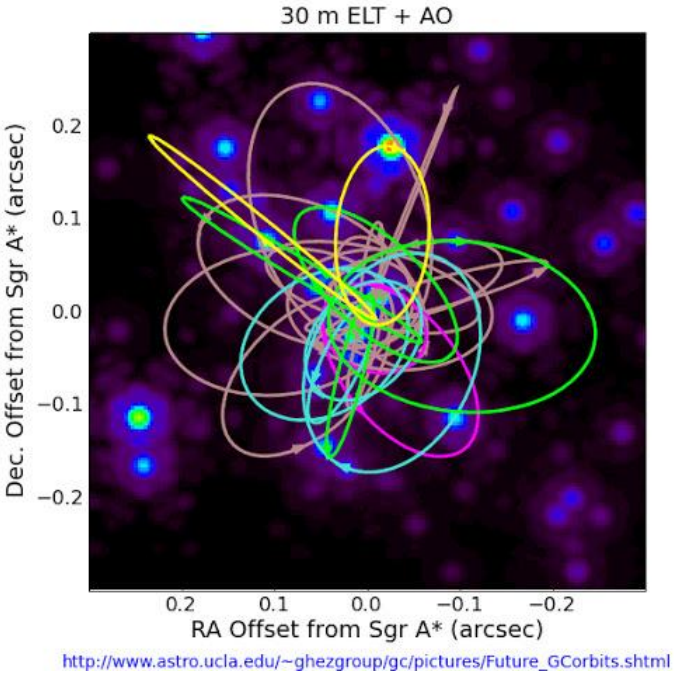
Modeling the AGN Channel for Gravitational Wave Sources

K.E. Saavik Ford & Barry McKernan

Things in Galactic Nuclei = Things in AGN disks!



Expect dense **BH** population in GN (~10^4/pc^3) from decayed GCs, mergers, SF etc.

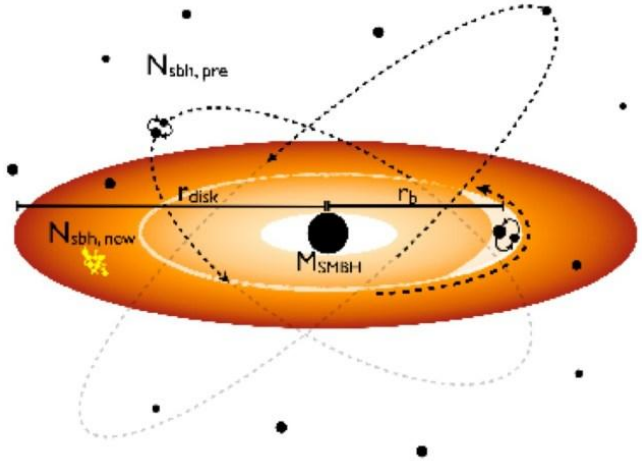
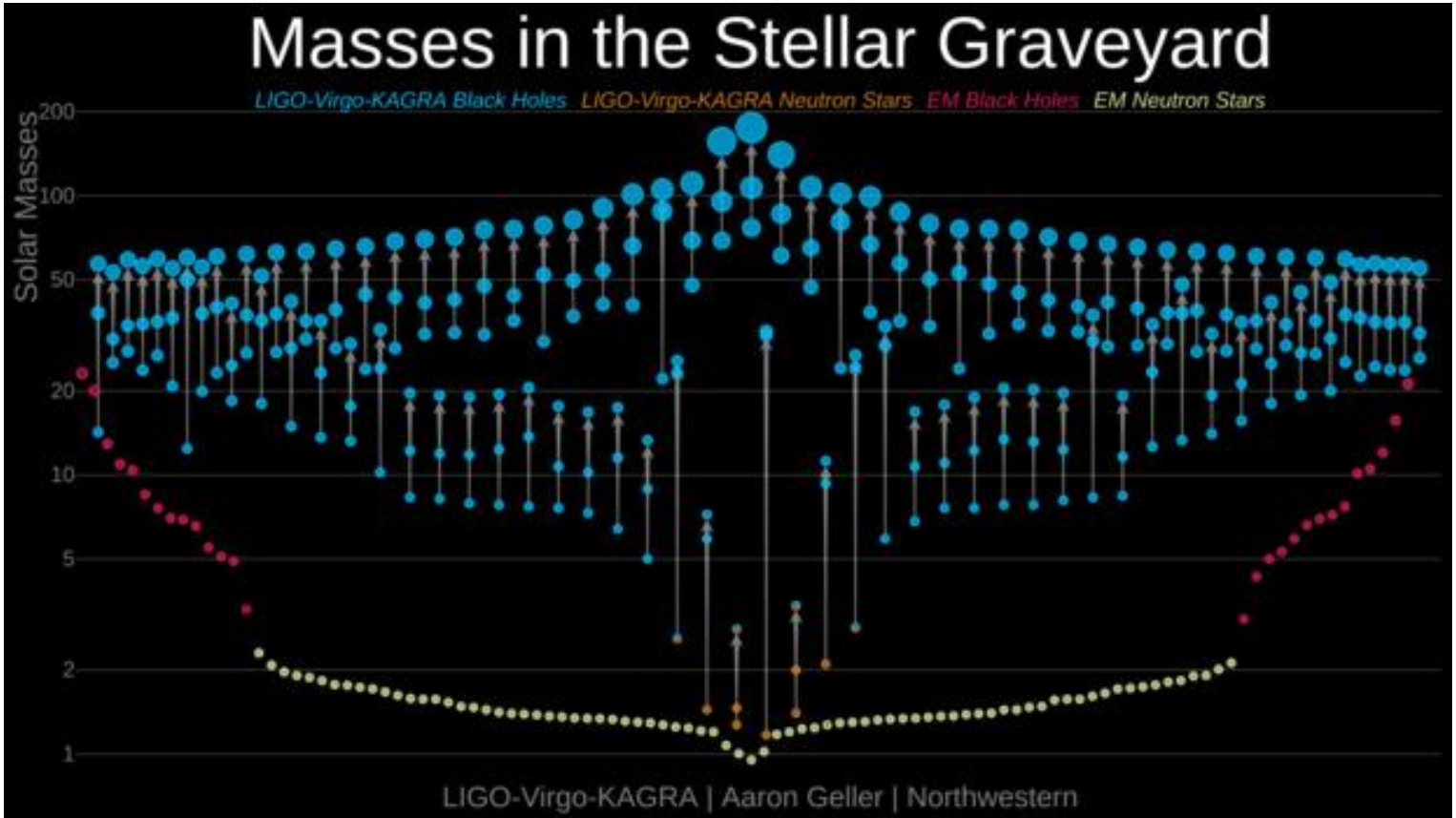


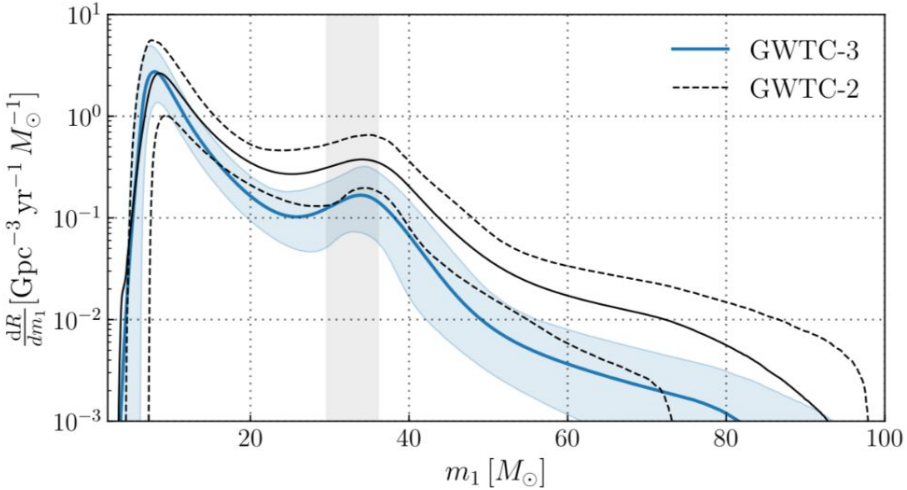
Image credit: Matthew O'Dowd

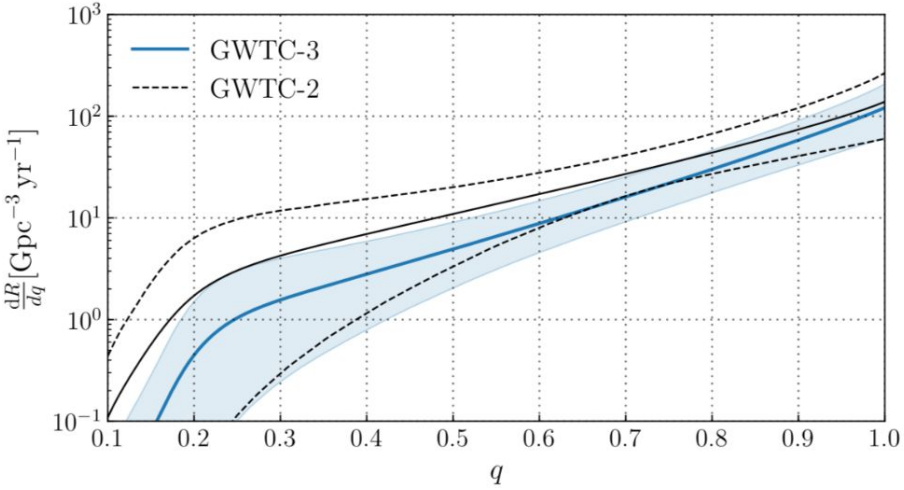
McKernan, Ford, Lyra, Perets **2012**
McKernan, Ford, Kocsis, Lyra, Winter **2014**

LVK Detections



GW Populations (GWTC-3)



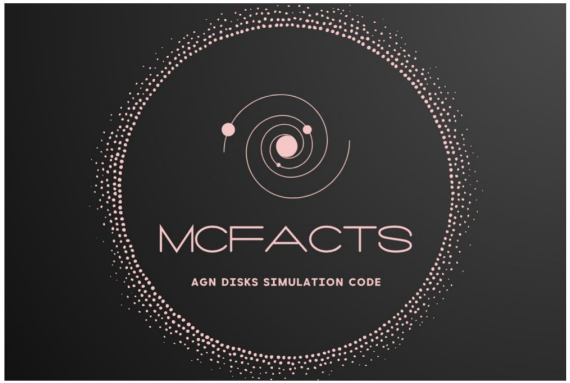


LIGO Collab, Abbott++21

Let’s model populations

Monte carlo For AGN Channel Testing & Simulation (McFACTS)

README.md



Monte carlo For AGN Channel Testing and Simulations

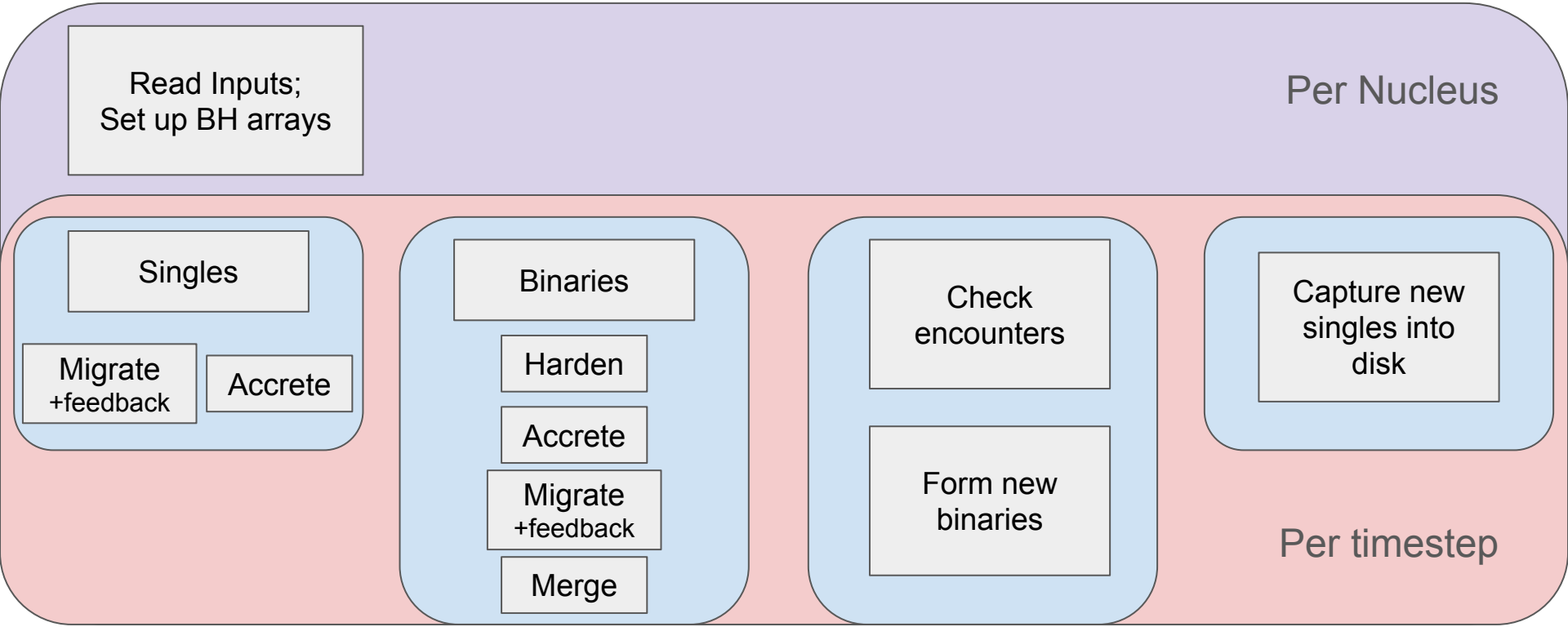
A python package that does the AGN channel for you!

Installation

The latest development version is available directly from our GitHub Repo. To start, clone the repository onto your machine:

Let’s model populations

Monte carlo For AGN Channel Testing & Simulation (McFACTS)



What could YOU do?

Pick one (or maybe more):

1) Track EM signatures of BBH mergers
2) Track EM signatures of disk crossing and/or EMRI objects
3) Implement stochastic migration corrections
4) IMRI tracking (heavy & light)
5) Add neutron stars & track EM signatures of BNS, NSBH mergers
6) Add WD, SNe, TDEs (related but maybe separate projects)

Then run it, write a paper or 2 (=MS thesis)! And be forever stuck with us… ;)