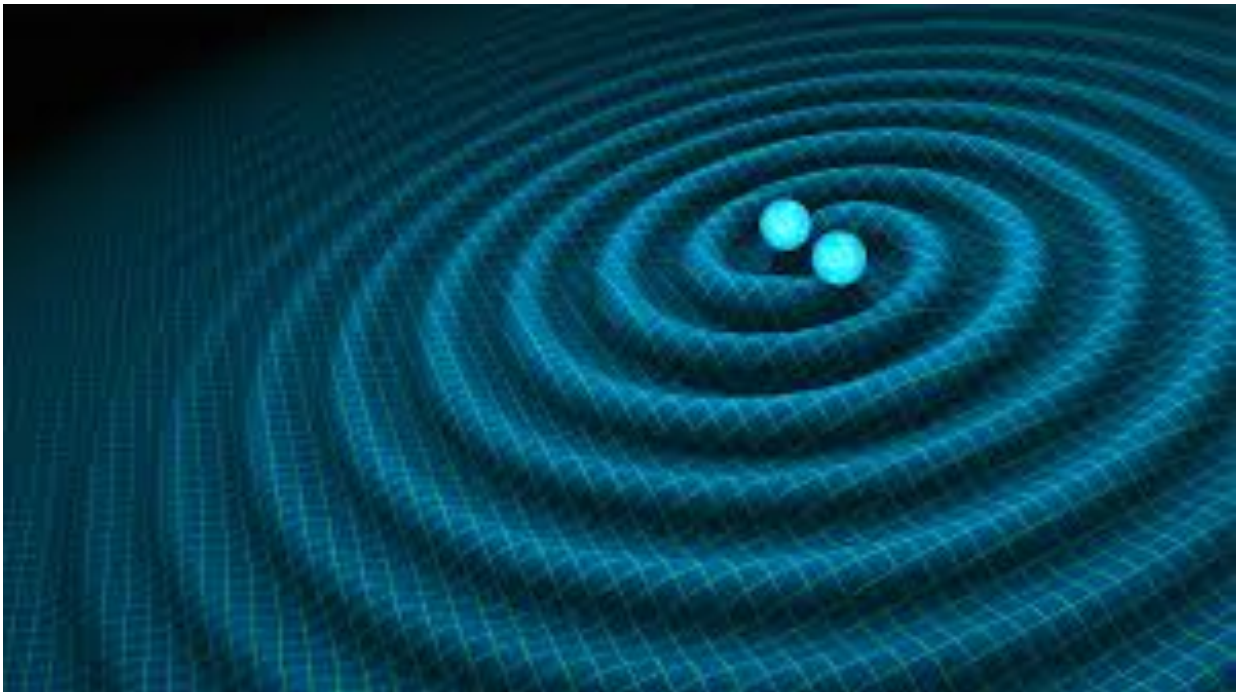
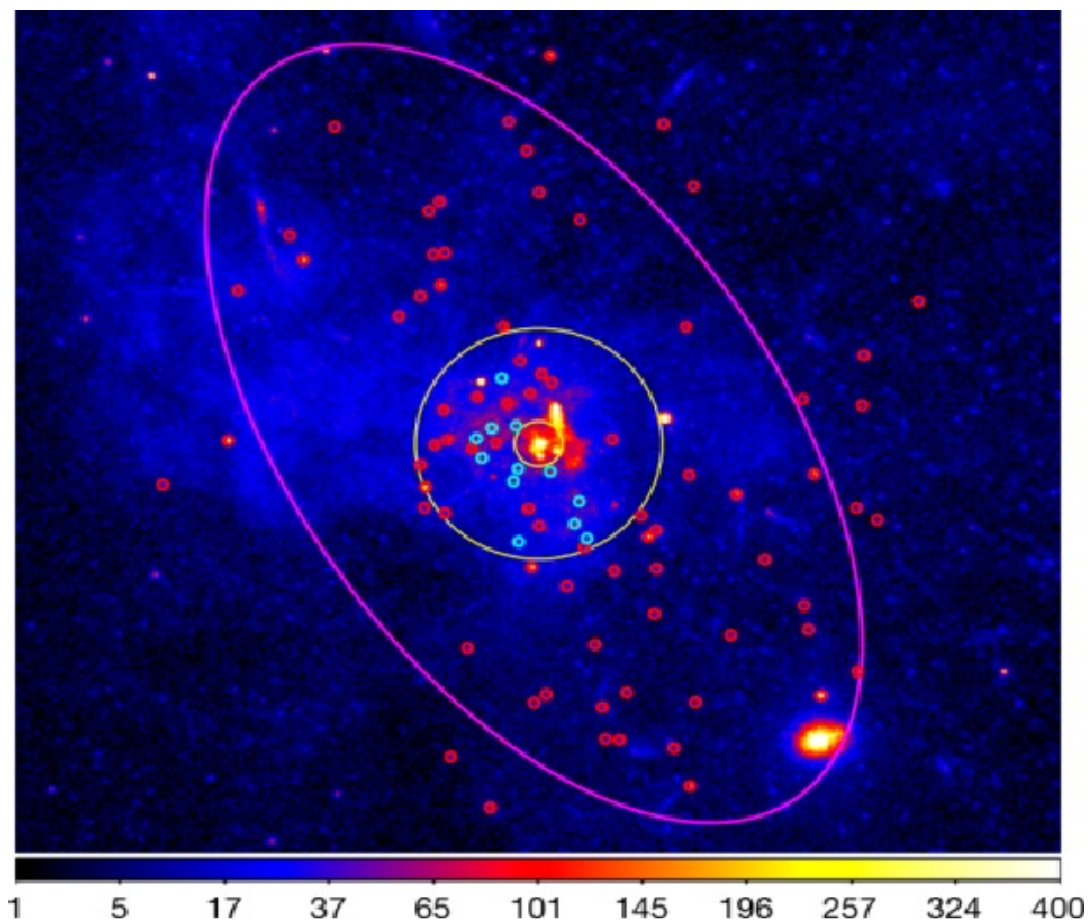
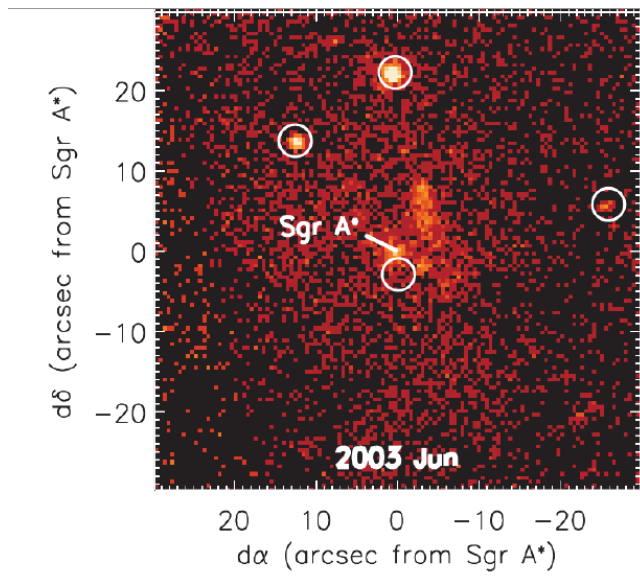


# EXOTICA FROM GALACTIC NUCLEI

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# X-RAY BINARIES IN THE CENTRAL PARSEC

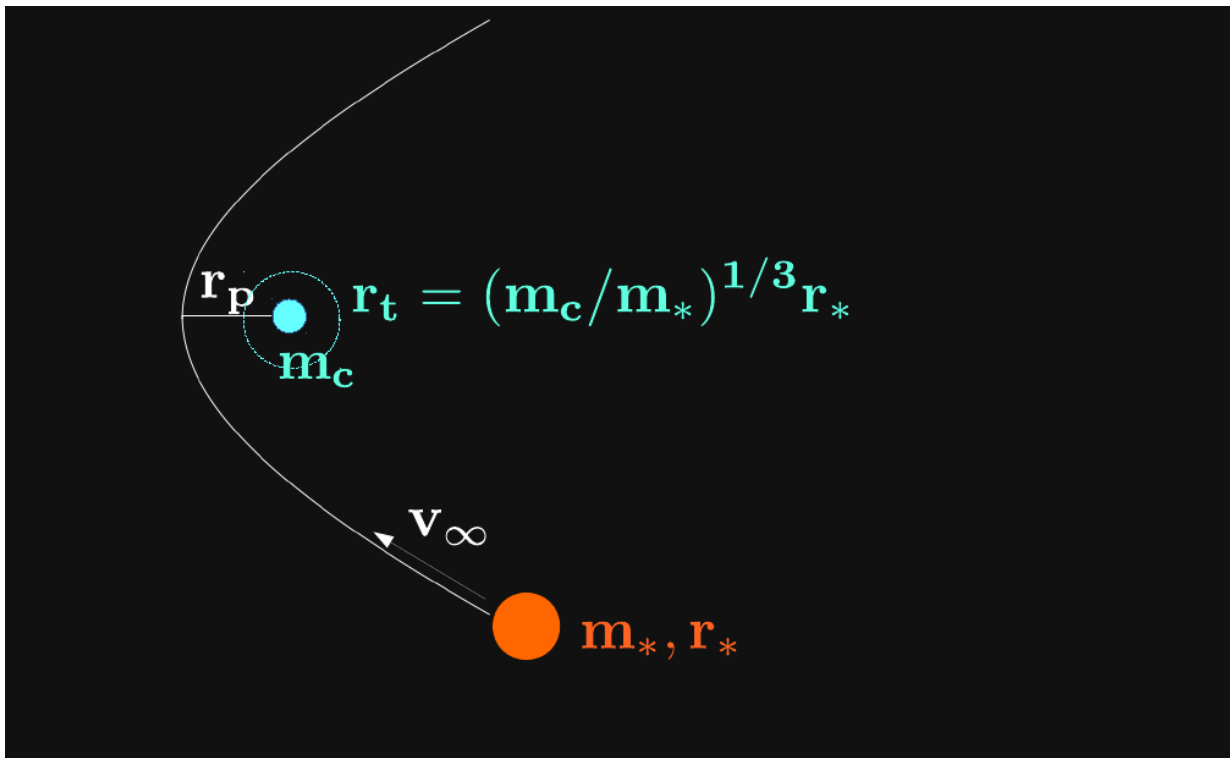




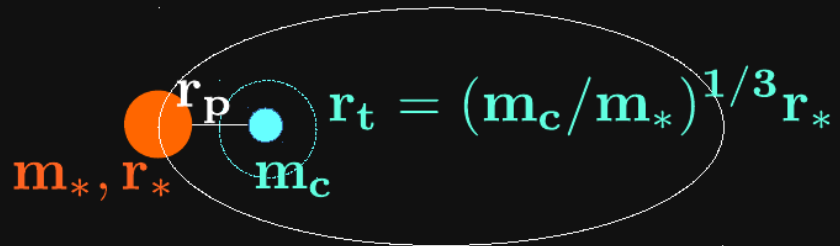
# FORMATION

- BH XRBs /  $M_*$   $\sim 10^3$  times field
- Likely not from (normal) binary evolution
- Dynamical formation
  - Tidal capture! (Fabian+1975, Press+Teukolsky1977, Lee+Ostriker 1986)

# TIDAL CAPTURE PHYSICS



# TIDAL CAPTURE PHYSICS



$$\Delta E \sim \frac{G m_*^2}{r_*} \left( \frac{r_p}{r_t} \right)^{-6} > \frac{1}{2} m_* v_\infty^2$$

$$v_\infty = 100 \text{ km s}^{-1}, r_p \approx 1.9 r_t$$

$$v_\infty = 200 \text{ km s}^{-1}, r_p \approx 1.6 r_t$$

## BOTTOM LINE

- Modeling suggests  $\sim 10^4$  isolated BHs in central parsec  
Muno *et al.* 2005
- Plenty of opportunities for follow-up work exploring consequences of this population!