Gravity @ ICTP

Yunes

- h.w. sol'n : write $u^\alpha = (\dot{t}, \dot{r}, \dot{\vartheta}, \dot{\varphi})$

  $\Rightarrow -\tilde{\mathcal{E}} = g_{\alpha\beta} t^\alpha u^\beta = g_{tt}\dot{t} + g_{t\varphi}\dot{\varphi}$

  - etc.

  $-\frac{d}{d\tau}(-\tilde{\mathcal{E}}) = u^\alpha \nabla_\alpha t_\beta u^\beta = u^\alpha u^\beta \underbrace{\nabla_\alpha t_\beta}_{\nabla_{(\alpha} t_{\beta)} = 0} + t_\beta \underbrace{u^\alpha \nabla_\alpha u^\beta}_{=0 \text{ geodesic}} = 0$

EMRI

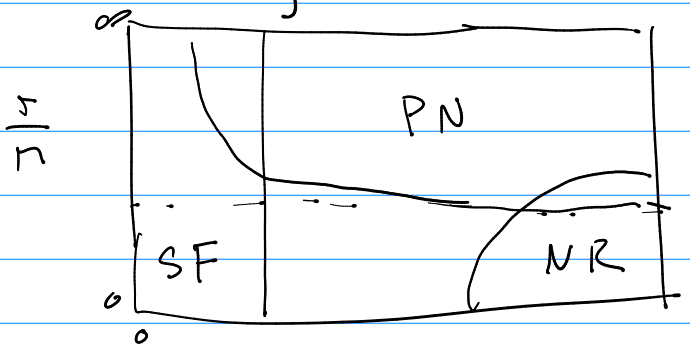
Def. SCO (stellar-mass cpt. object) in a generic orbit around a SMBH (supermassive BH).

- formation scenarios

a) Capture

b) Disk formation

- modelling



$q = \frac{m}{M}$