

Miyamoto - Nagai 1975

- Good first order approximation of  $\phi$
- Axisymmetric potential

$$\phi(r) = - \frac{GM_D}{\sqrt{(R^2 + (a + \sqrt{a^2 + b^2})^2)}}$$

$M_D$  is Disk mass

$z$  is plane offset of star

$a$  is scale length

$b$  is scale ~~radius~~ height

$R^2$  is  $x^2 + y^2$  or dist. to  $\star$  planar

Hengquist 1990

$$\phi(r) = - \frac{GM_B}{\sqrt{(r^2 + a^2)}}$$

$M_B$  is bulge mass  
 $r$  is dist. to center

$a$  is scale length

- Jaffe points good to have it uses non-elementary properties  $\rightarrow$  this is simpler & more widely used

Navarro et al. 1997

$$\phi_H = - \frac{GM_H}{r} \frac{\ln(1 + \frac{r}{r_h})}{\ln(1 + c) - \frac{c}{1+c}}$$

$M_H$  is halo mass

$r$  is dist. to center

$r_h$  is

$c$  is cut off

Applicable for flat Universe