7.4 MERGERS

$M_1 \sim M_2$ collide — neither dynamical friction or impulsive approximation

⟶ NUM. SIMS.

Qualitatively

i) initial speed and impact parameter
ii) the importance of internal structure and orientation
iii) observ. properties of the remnant

Spherical gals

$M_1 = M_2 = M$ $\qquad \mu = \frac{1}{2} M$

r_h median radius

$$\sigma_v^2 \sim \frac{0.4\, G M}{r_h} \quad (\text{V.T or Spitzer})$$

encounter is characterized by

$$\hat{E} = \frac{E_{orb}}{\frac{1}{2}\sigma^2} \qquad \hat{L} = \frac{L}{r_h \sigma}$$

$L = \emptyset$ head on / impact parameter $= 0$

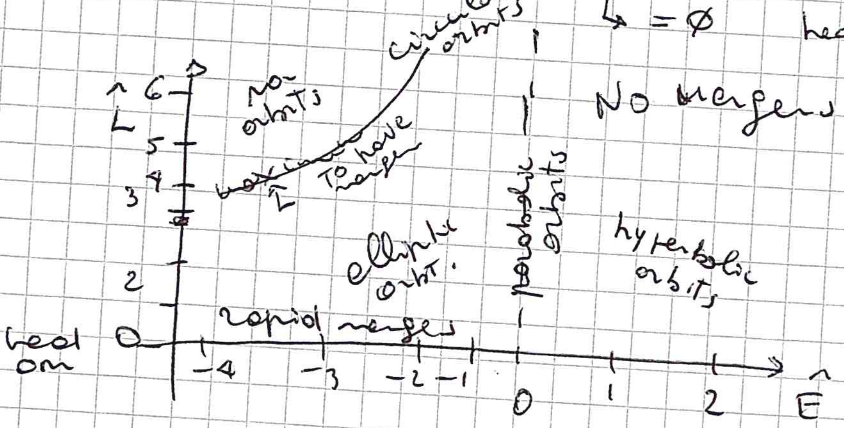

fig 7.9

↘ bound orbit $\hat{E} < 0$

Dry	only stellar merger!
Wet	gas → SF

Remnants — prolate / oblate rotating

$\rho \propto r^{-3}$ as in ellipticals