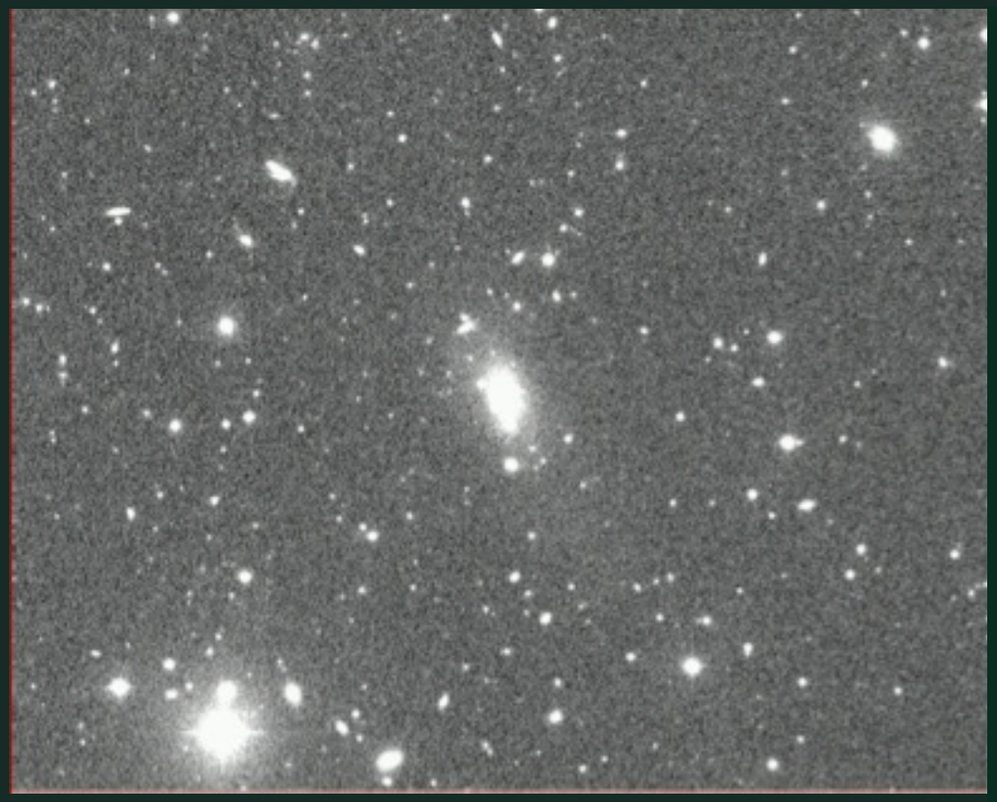
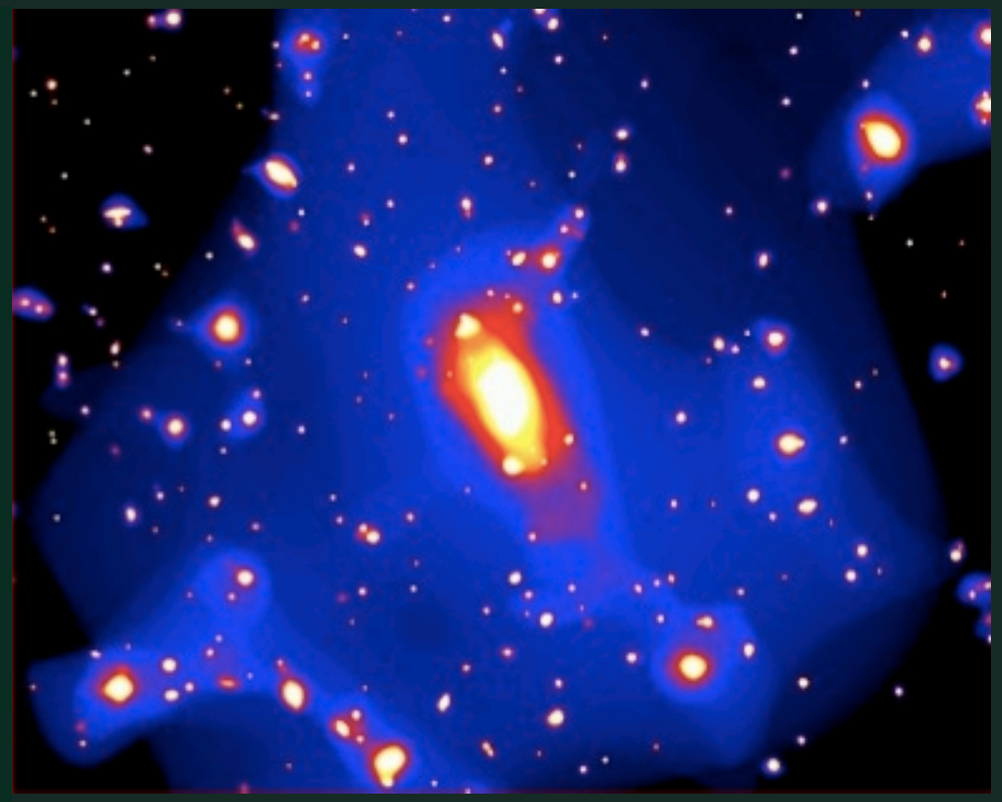
Distribution of Baryons & DM in Clusters & (Cluster) Galaxies: Clues from ICL

Baryonic Processes: Pandora's Box of Structure Formation

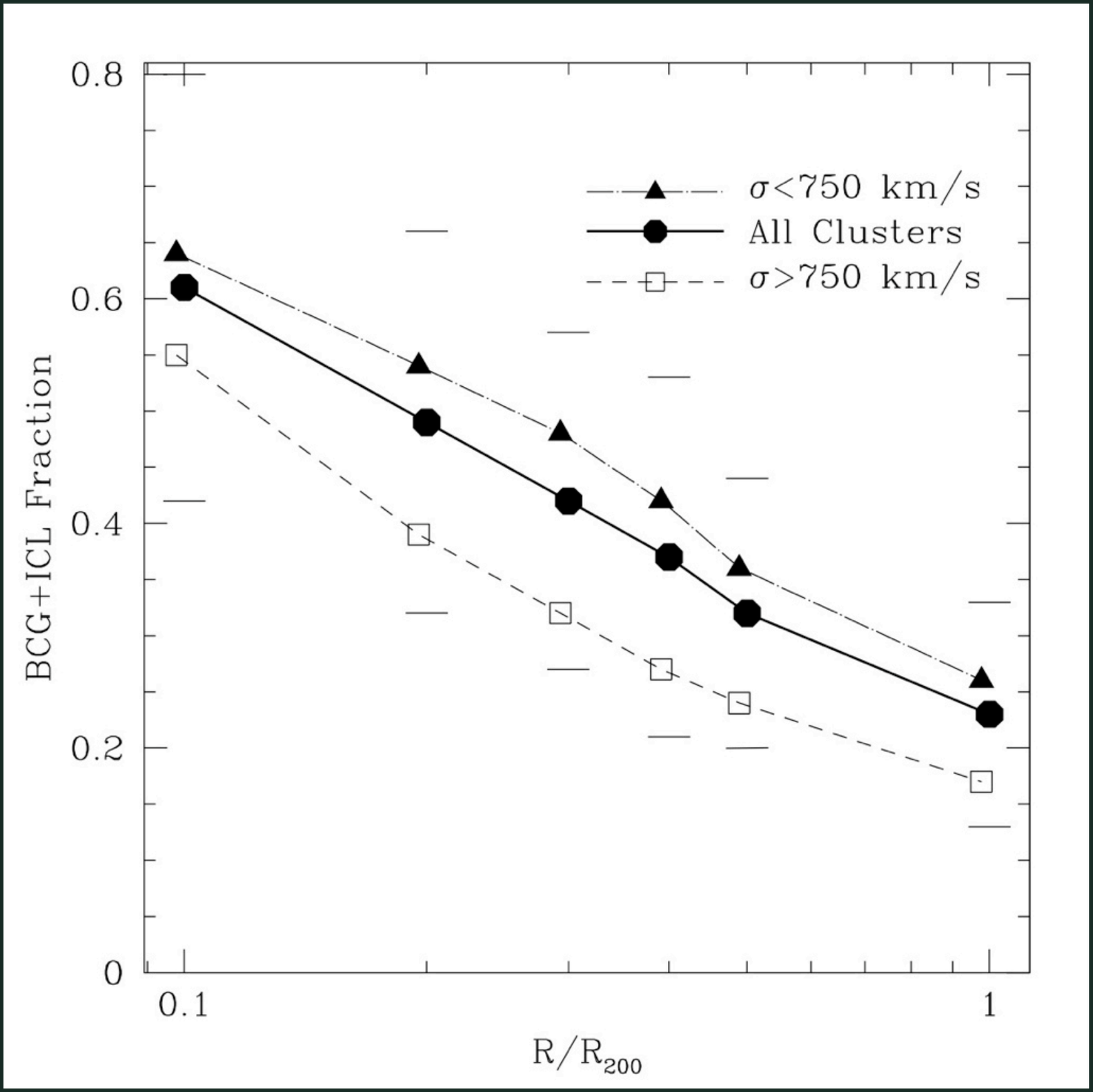




with Anthony Gonzalez (U. Florida) and Ann Zabludoff (U. Arizona)

baryonic processes in action...

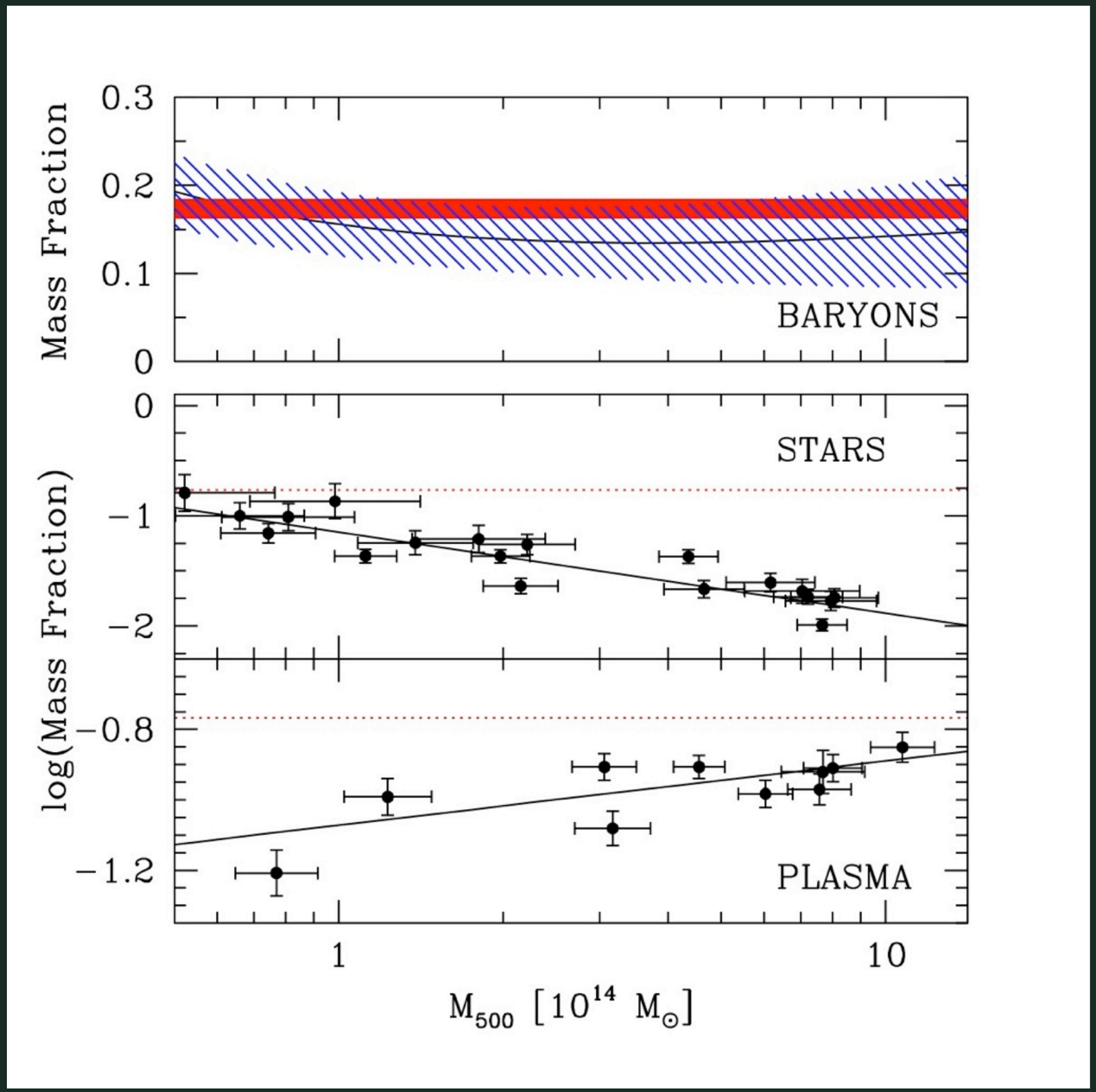
different stellar component behave differently



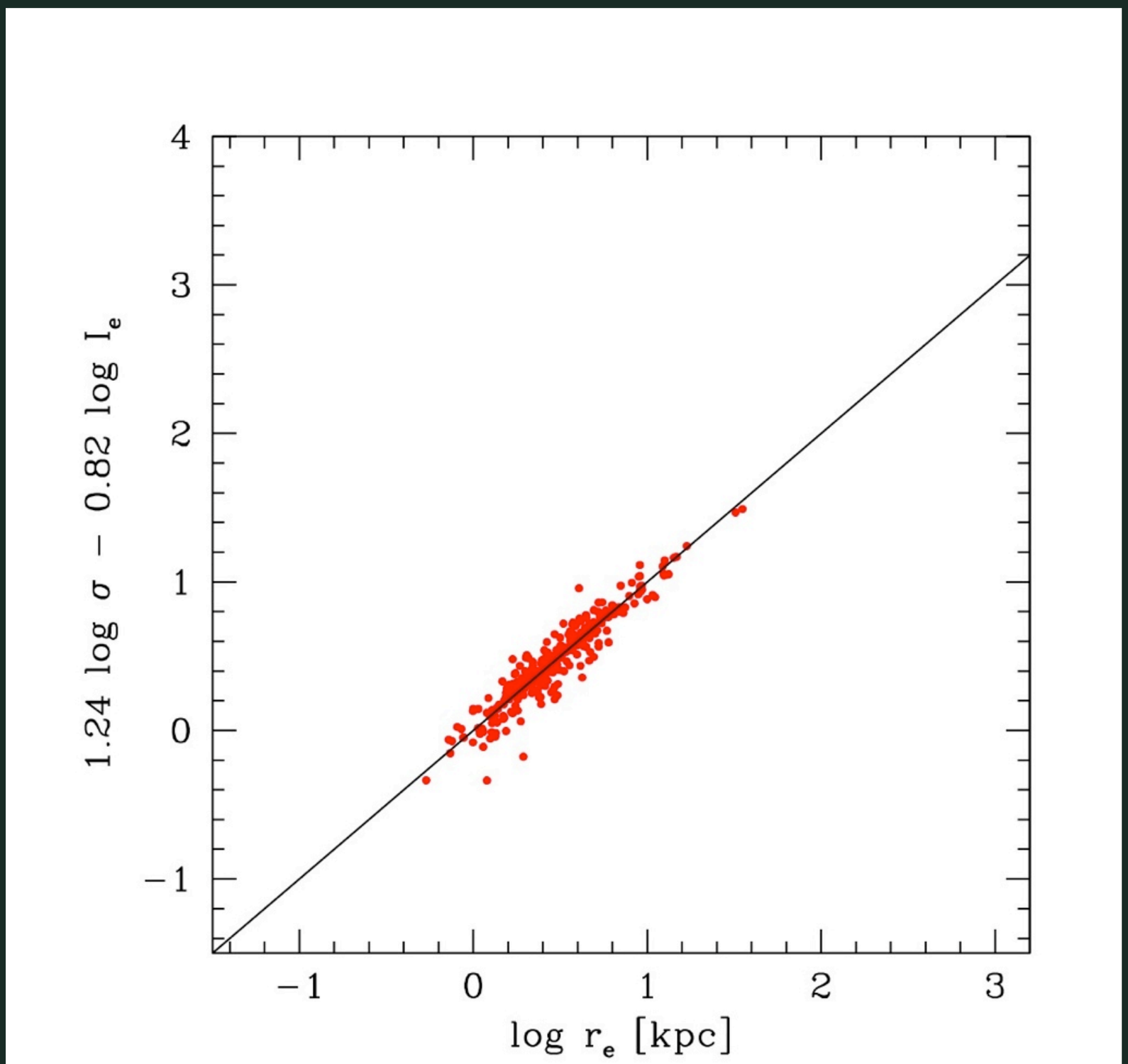
Gonzalez et al. 2006

baryonic processes in action...

differences are a function of mass



Gonzalez et al. 2006



Fundamental Plane: E’s

Revisiting the FP derivation

$$2K + W = 0$$

Scalar Virial Theorem

$$\langle v^2 \rangle = \frac{|W|}{M}$$

$$\sigma^2 \propto \frac{GM_e}{r_e}$$

assumption of simple scalings (homology)

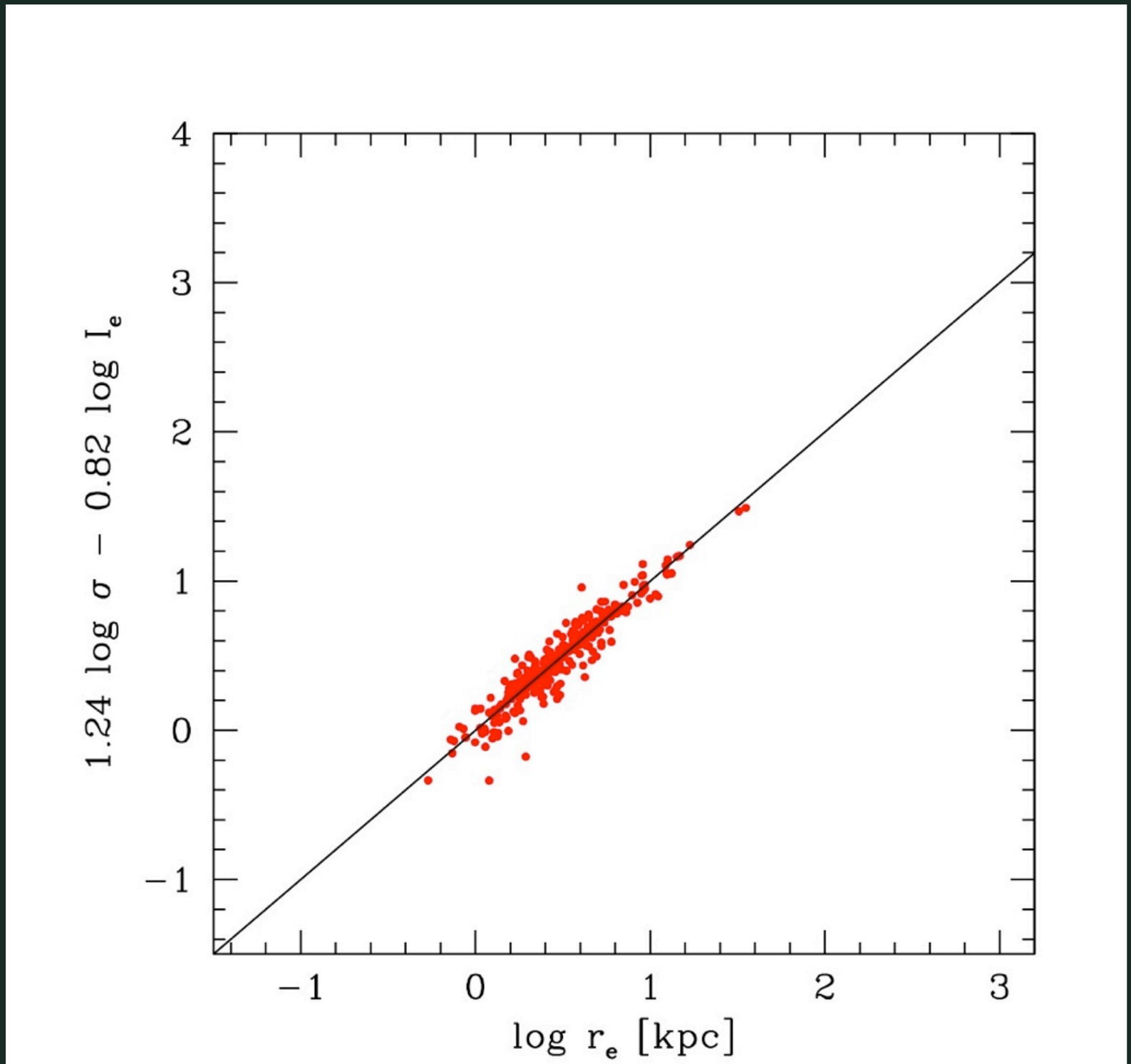
$$\sigma^2 \propto \frac{(M_e/L_e)(I_e r_e^2)}{r_e}$$

introduce M/L & I_e

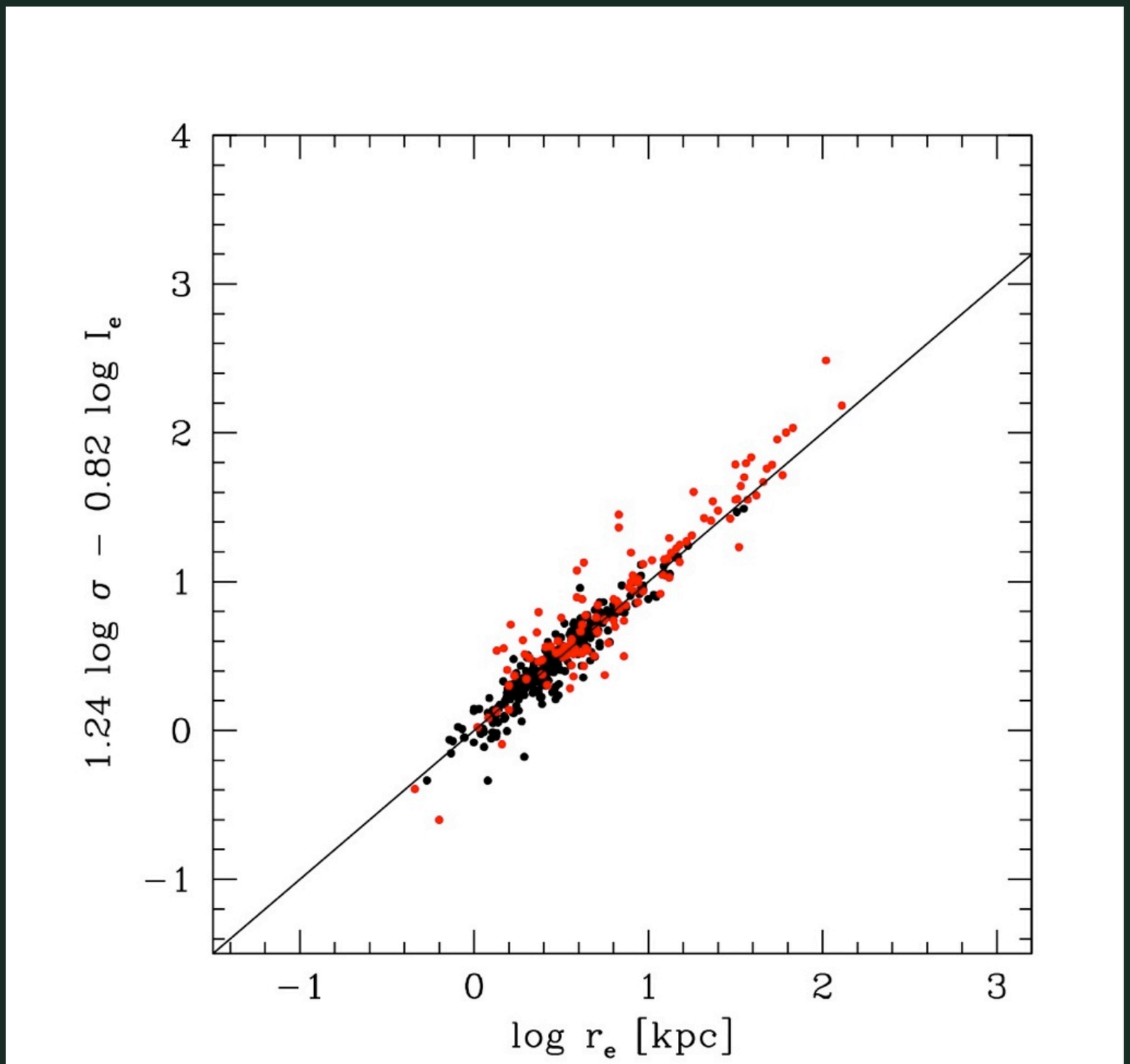
logarithms and rearranging terms

$$\log r_e = 2\log\sigma - \log I_e - \log M_e/L_e + C$$

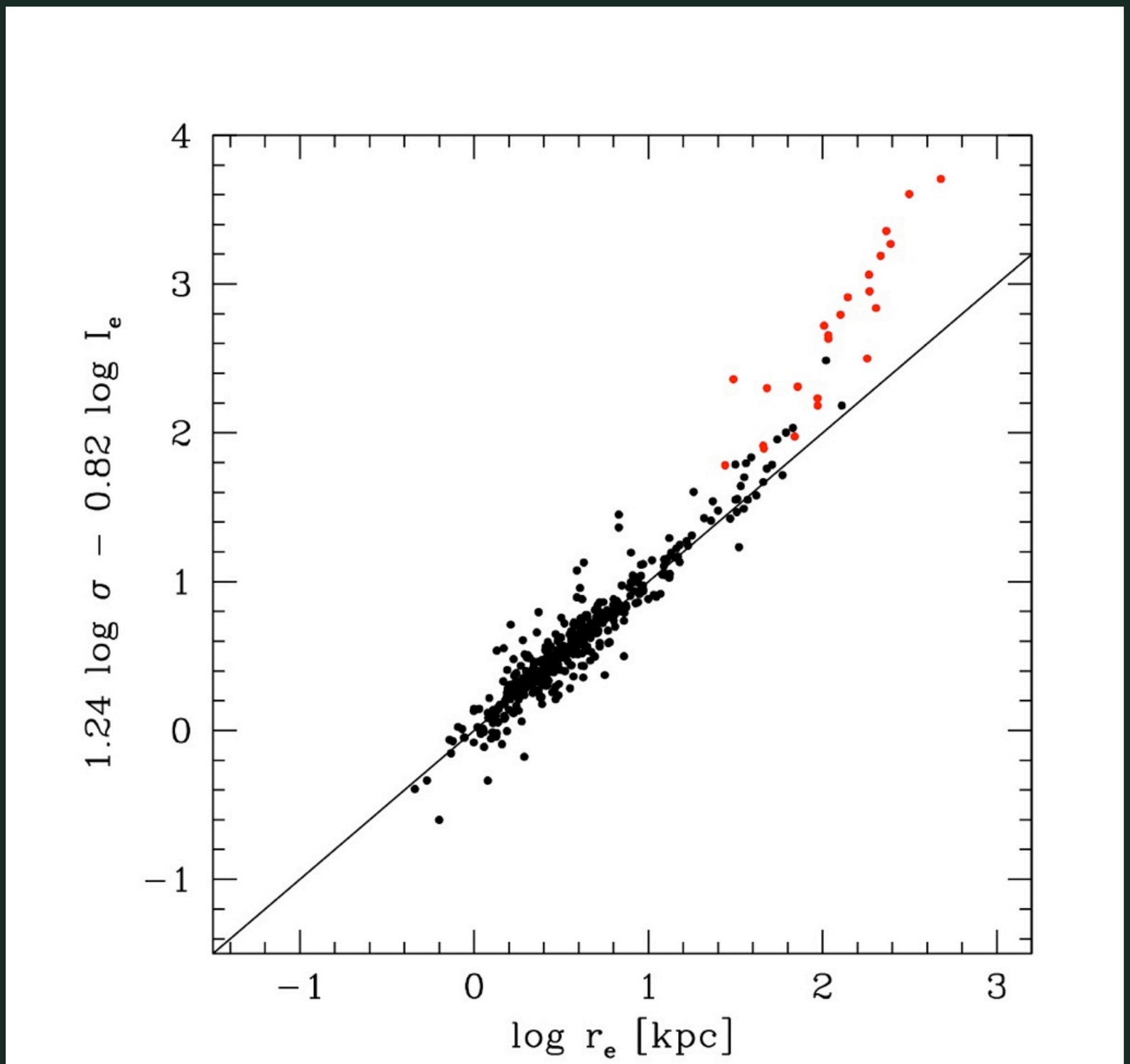
$$\log r_e = 2\log\sigma - \log I_e - \log M_e/L_e + C$$



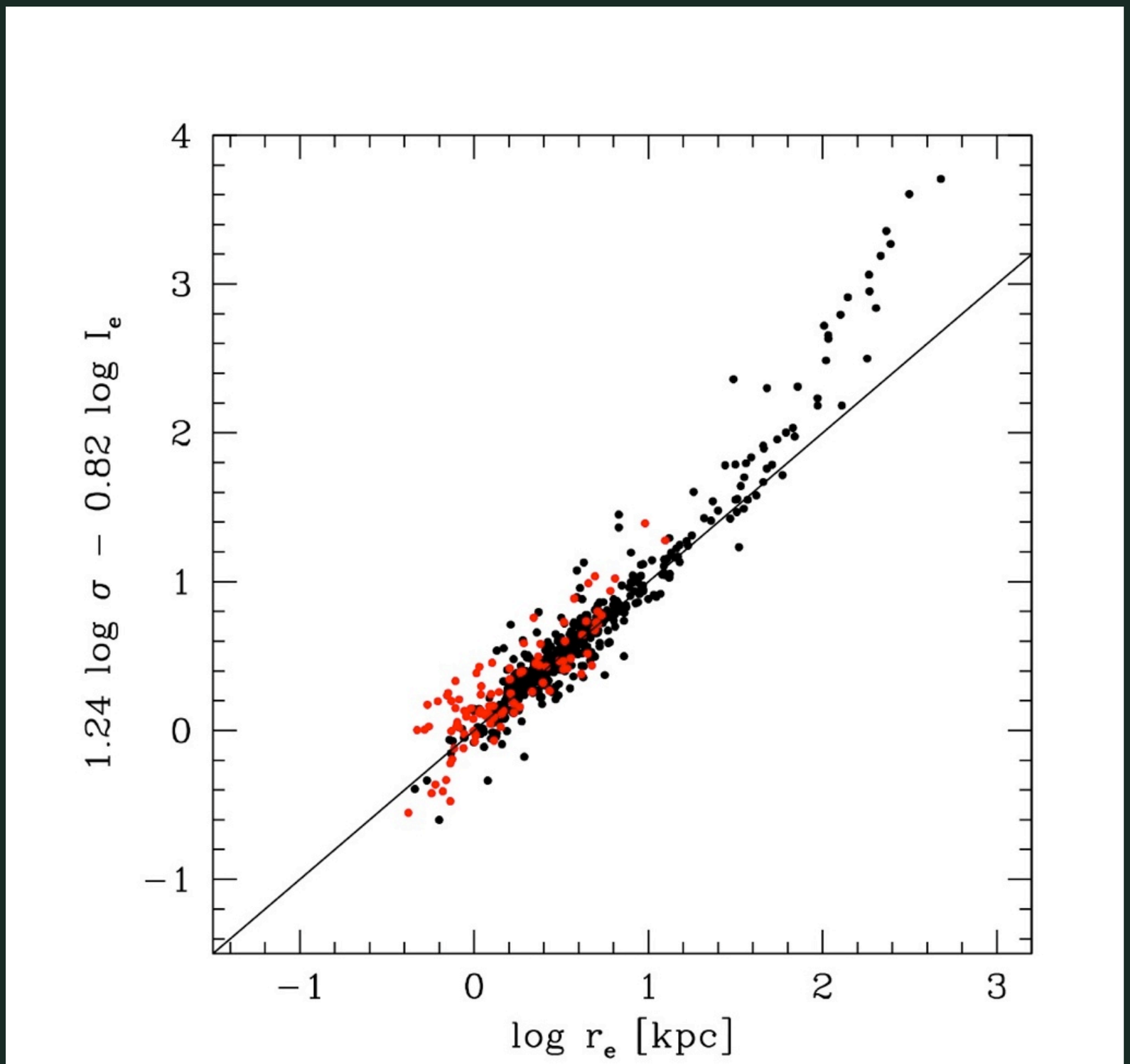
Fundamental Plane: E’s



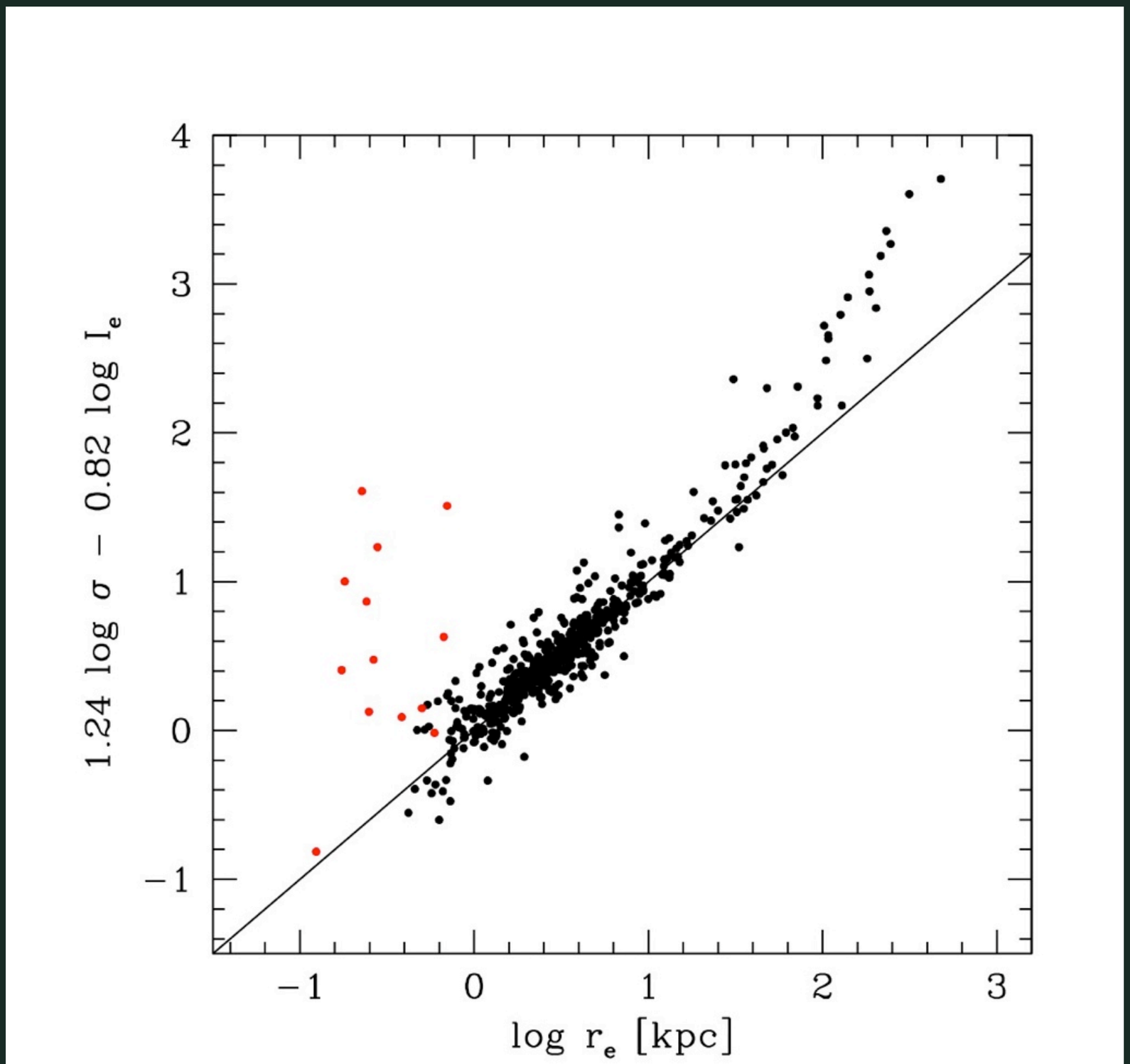
Fundamental Plane: E’s + BCG’s



Fundamental Plane: E’s + BCG’s + ICL



Fundamental Plane: E’s + BCG’s + ICL + dE’s



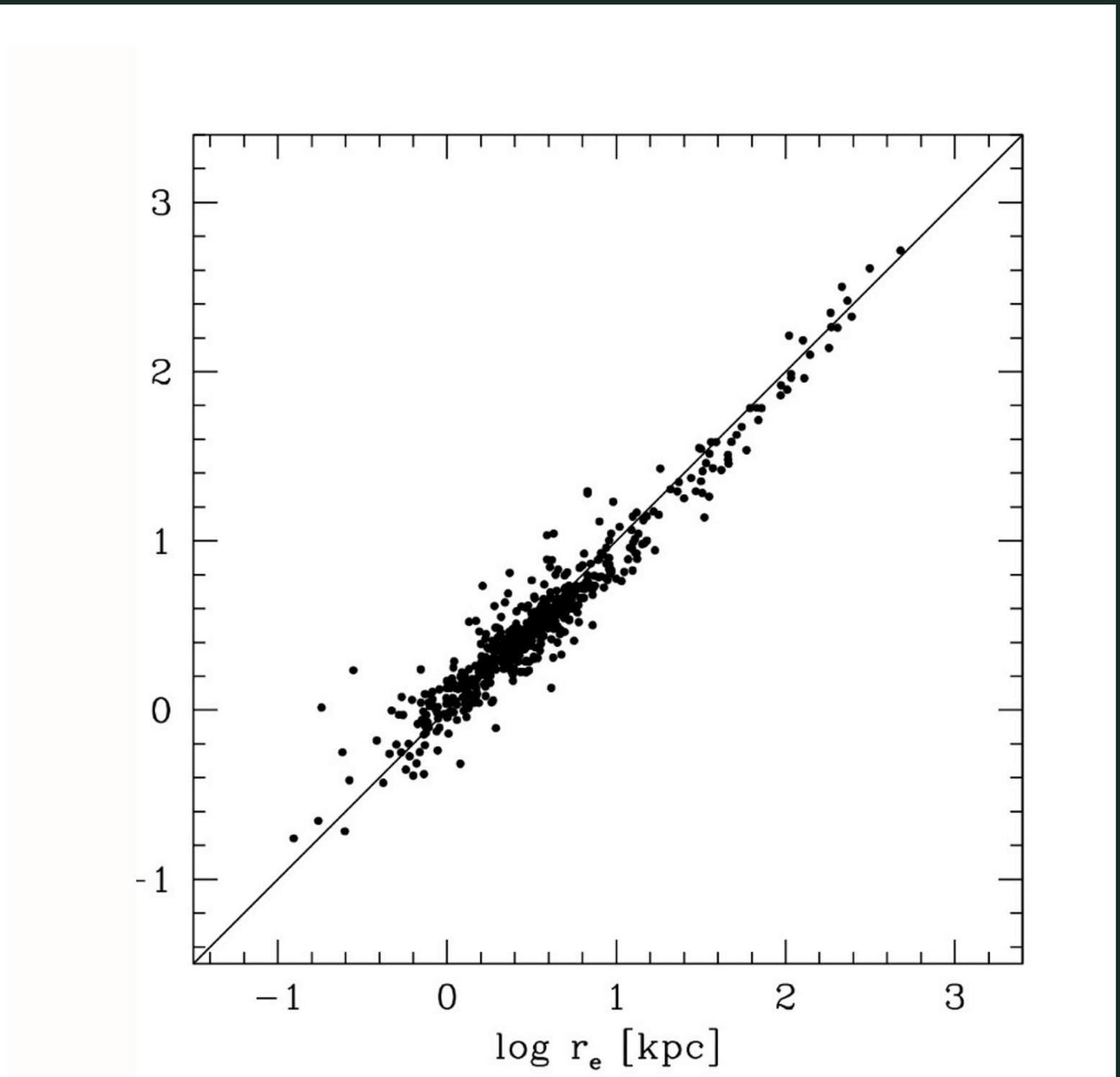
Fundamental Plane: E’s + BCG’s + ICL + dE’s + dSph

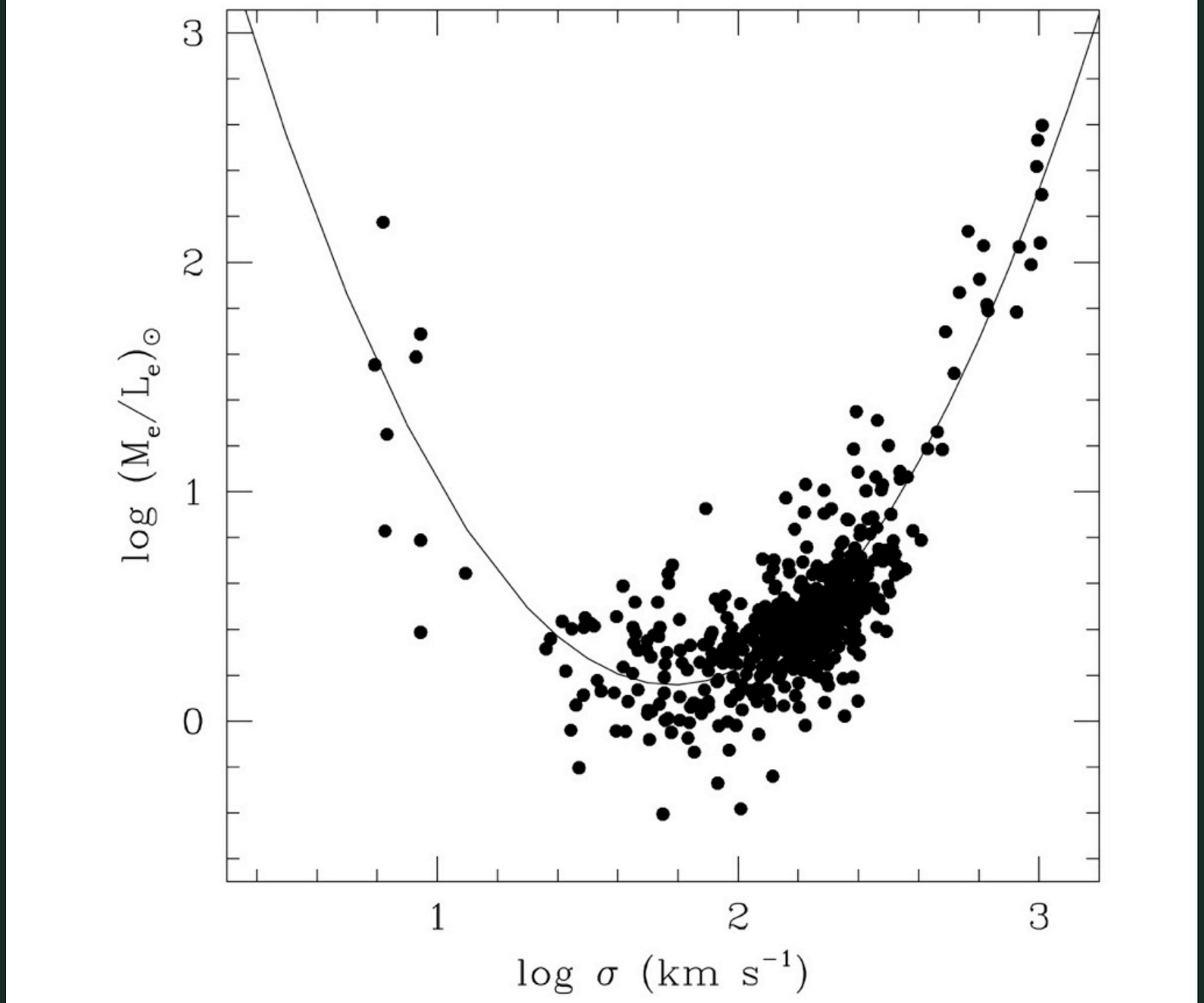
Are there different classes of objects?

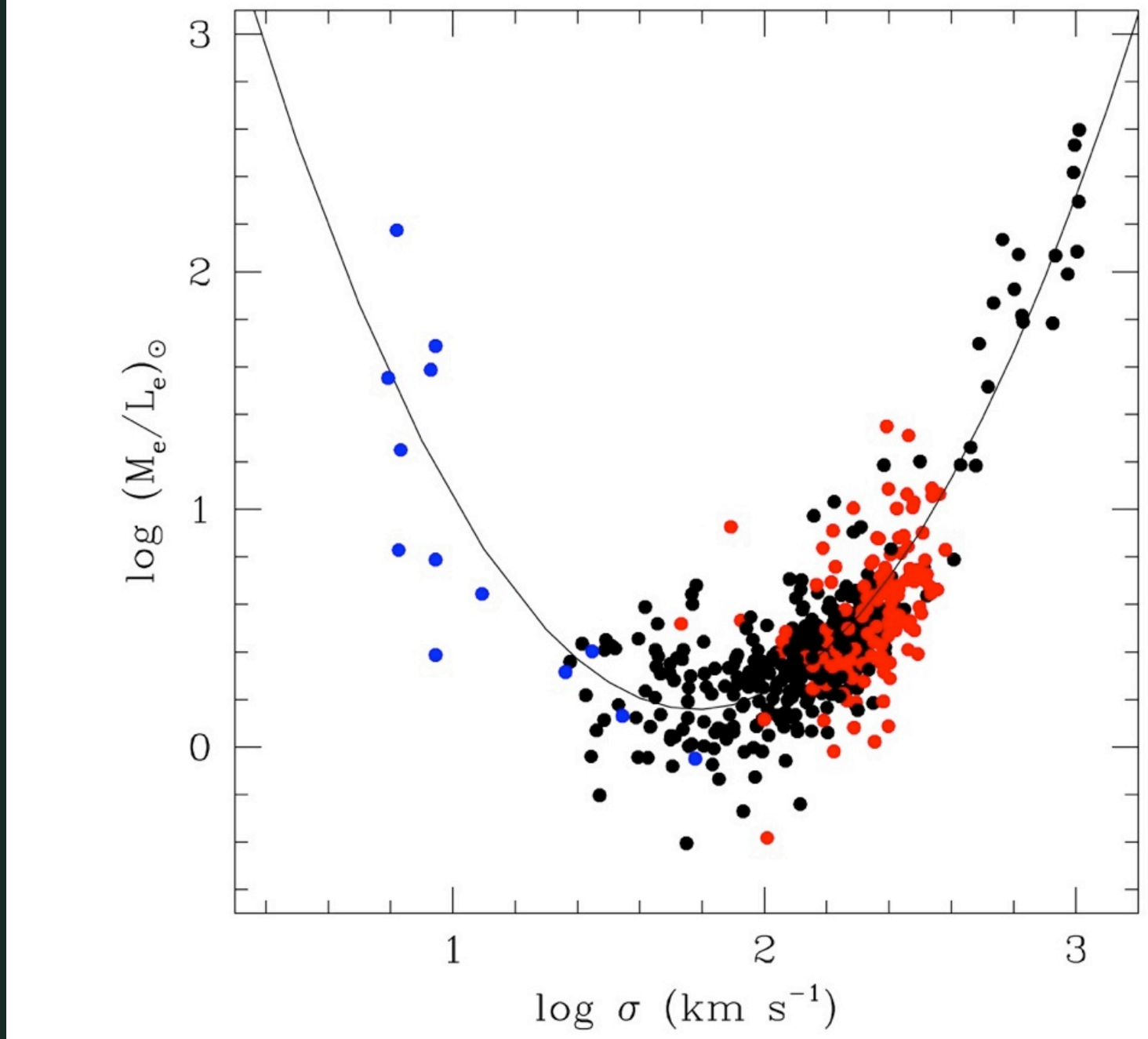
Is the fundamental relationship more complex?

$$\log r_e = 2\log\sigma - \log I_e - \log M_e/L_e + C$$

hope?




3
2
1
0
log $(M_e/L_e)_\odot$
1
2
3
log σ (km s^{-1})


3
2
1
0
log (M_e/L_e)_⊙
1
2
3
log σ (km s^-1)

A single family of spheroids, where baryon packing is a f(M)?