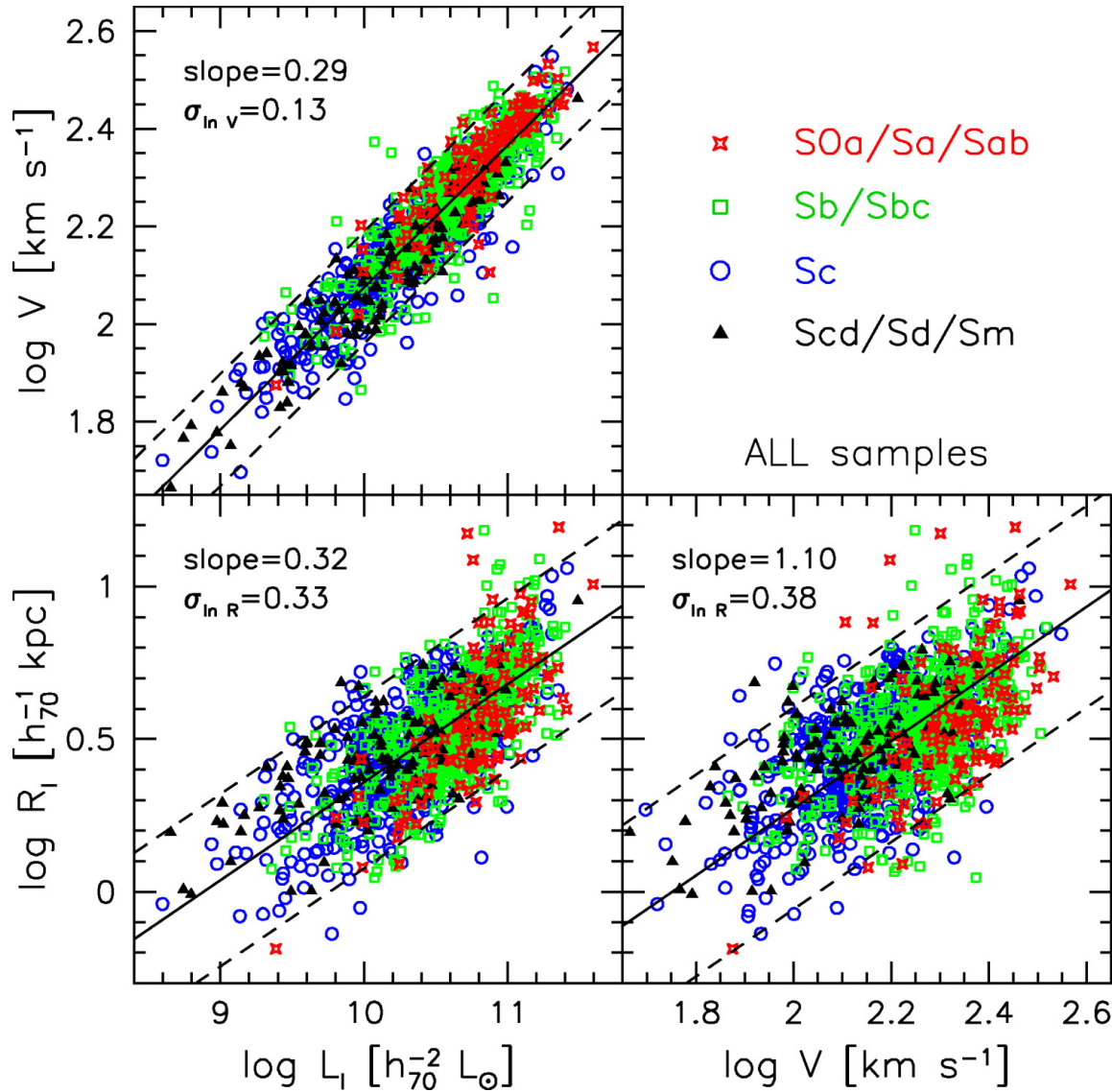
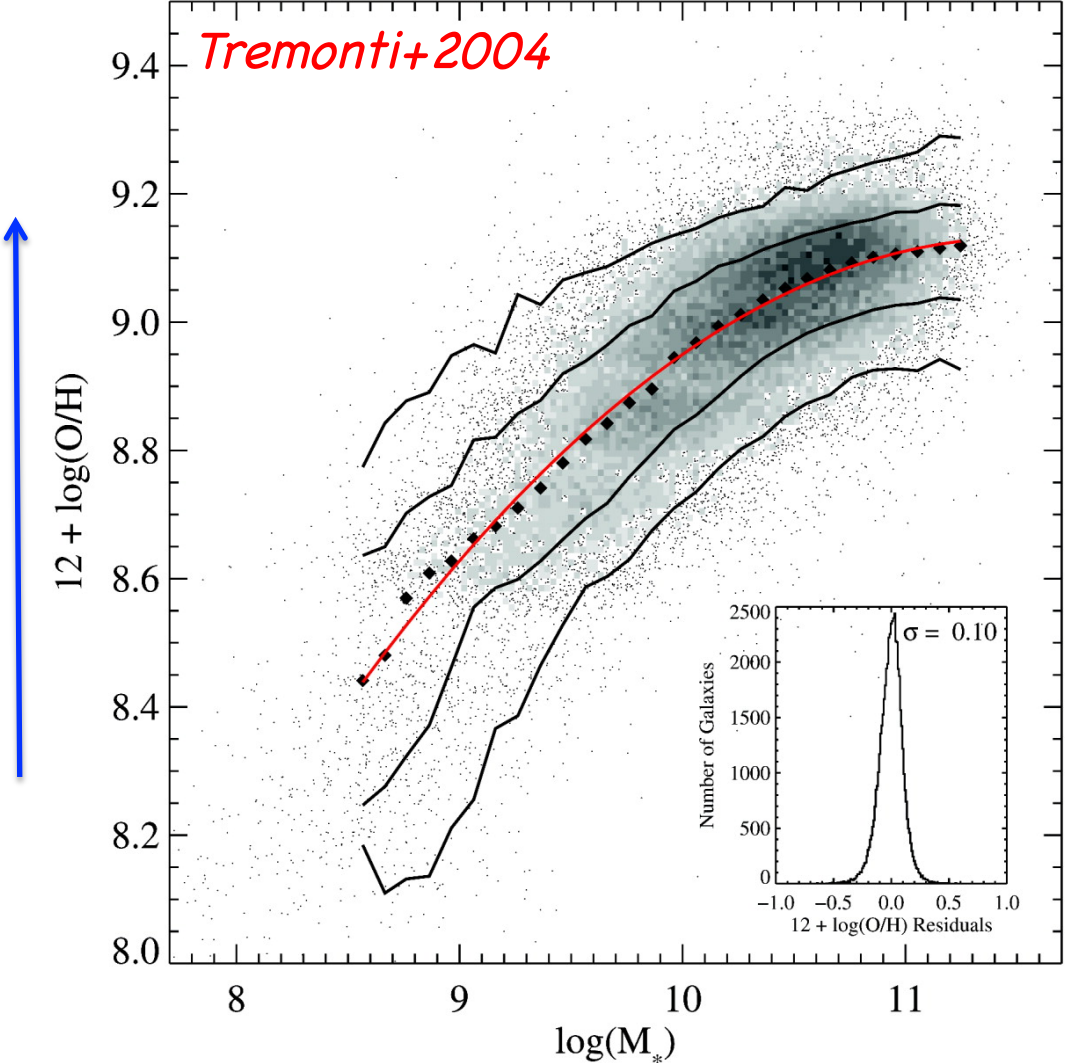


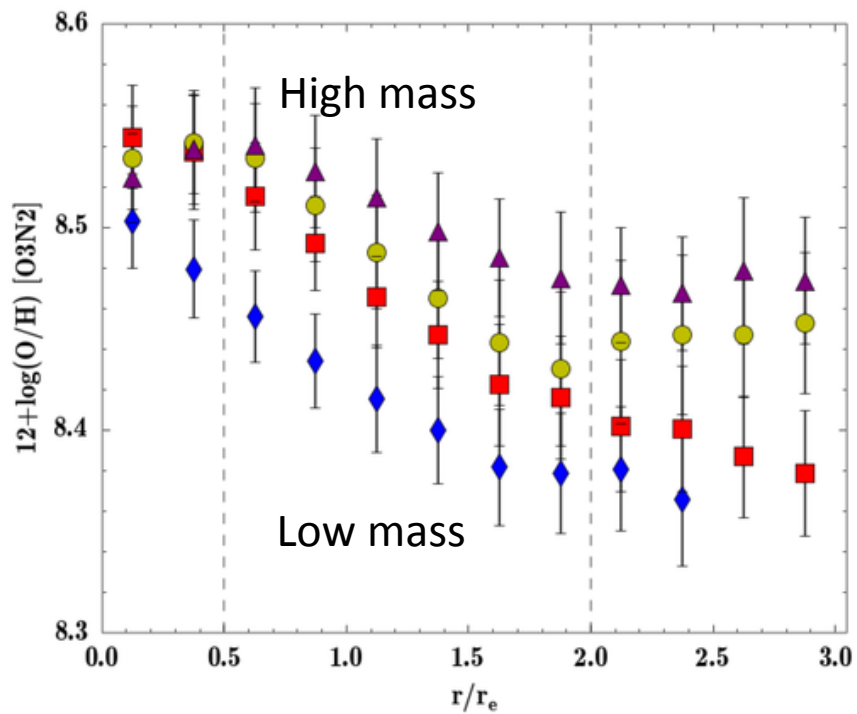
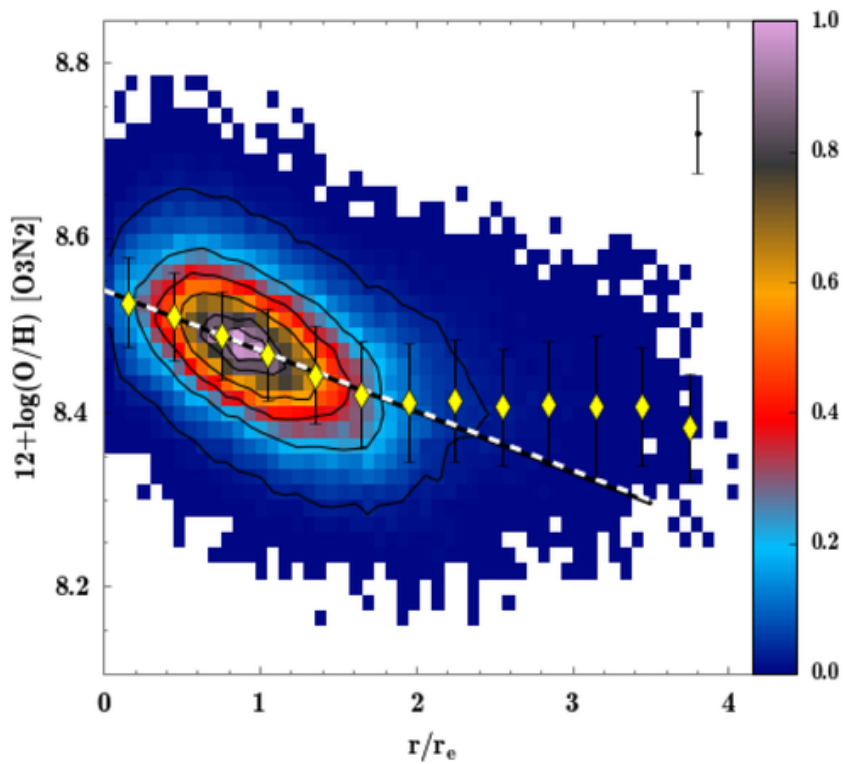
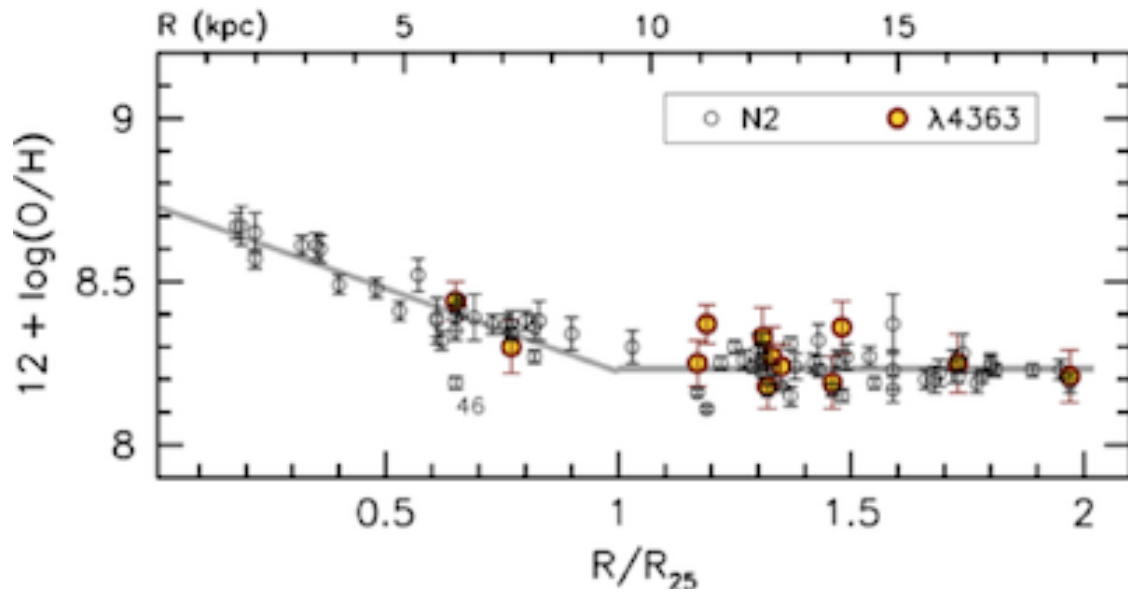
I-band Tully-Fisher Relation for Spiral Galaxies



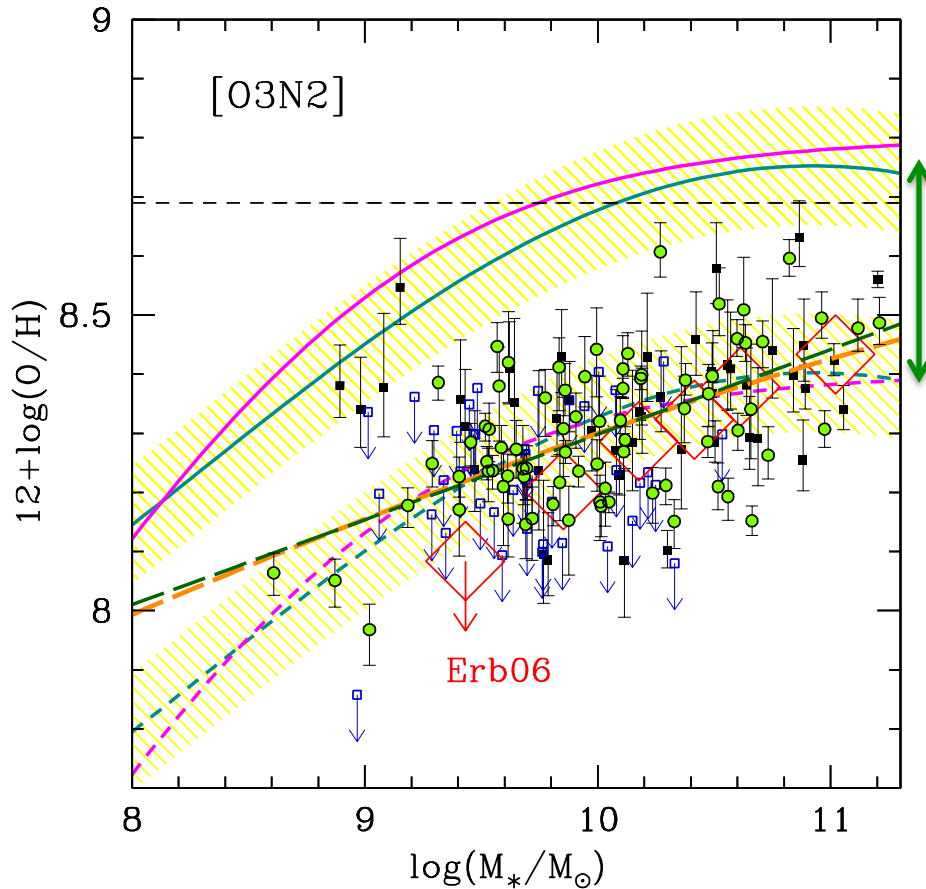
$$L_d = 5.8 \times 10^{10} L_{\odot} (v_{\text{obs}}/200)^{3.44}$$

(Stellar) Mass- (Gas-phase) Metallicity Relation ("MZR")





“Mass-Metallicity” Relation @z~2.3



- $\Delta \log(O/H) \approx 0.35$ dex, or oxygen abundance higher by a factor of ≈ 2.3 since $z \approx 2.3$
- Consistent with a constant offset, independent of M^*
- Intrinsic scatter at a given M^* is ≈ 0.09 dex
- How can it possibly be that tight?