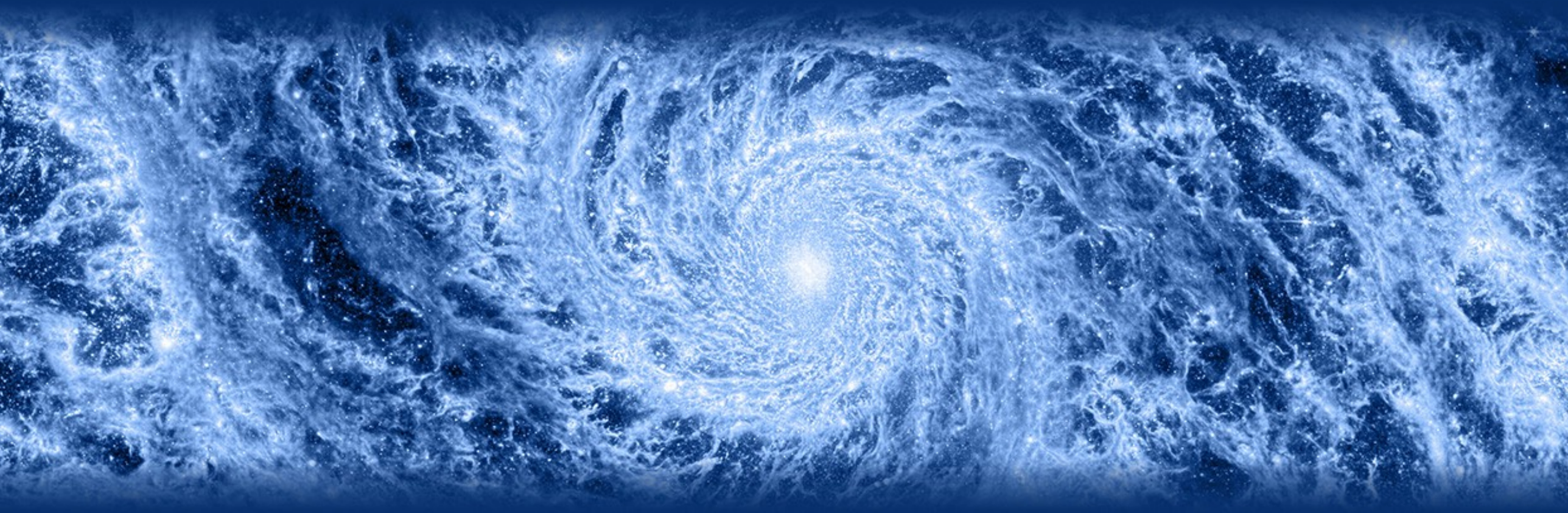
Galaxies

Prof. Benedikt Diemer



Chapter 11 • Galactic dynamics

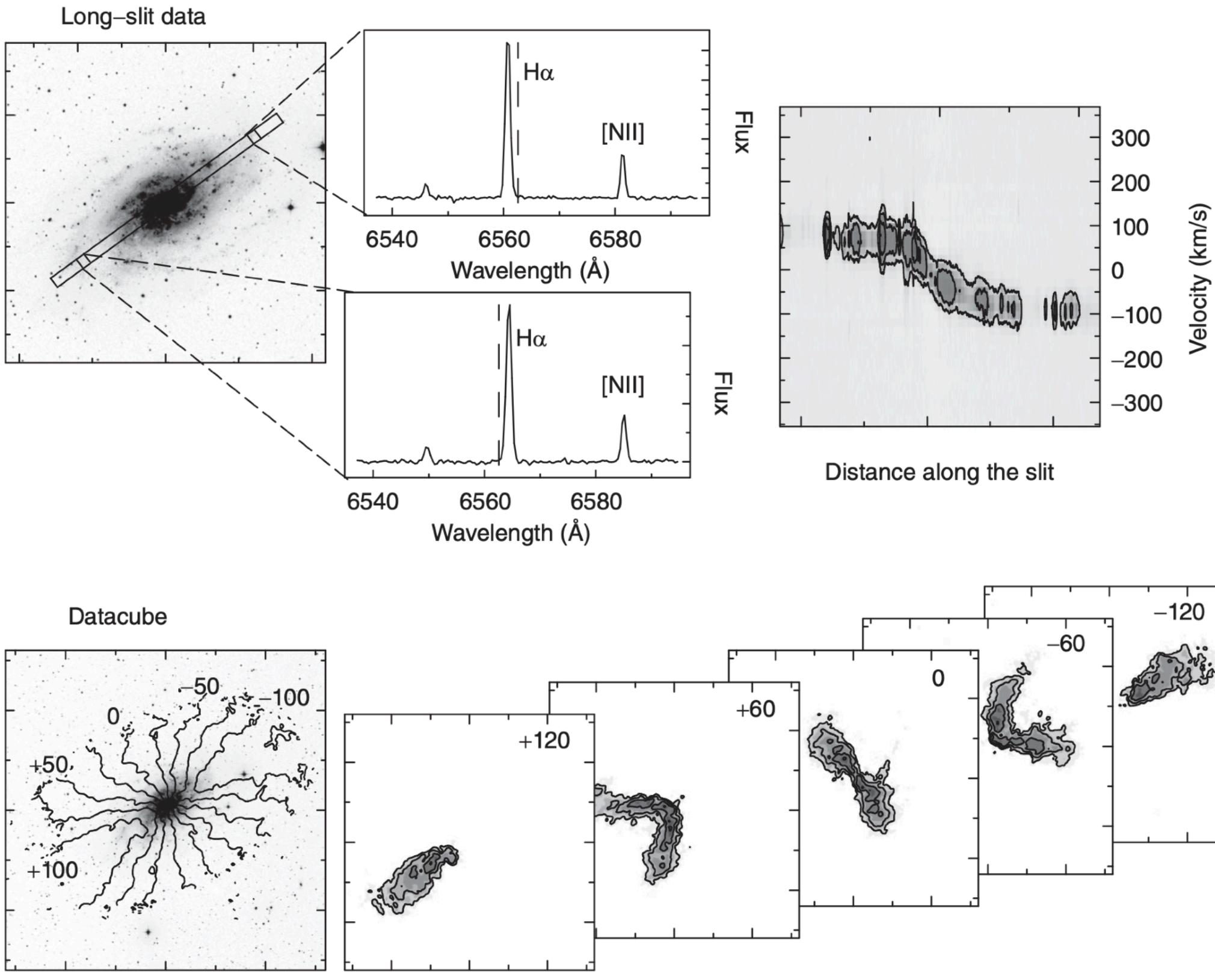
§11.1 • Disk galaxies

§11.1.1 • Angular momentum and disk size

Formation of spiral galaxy (simulation)

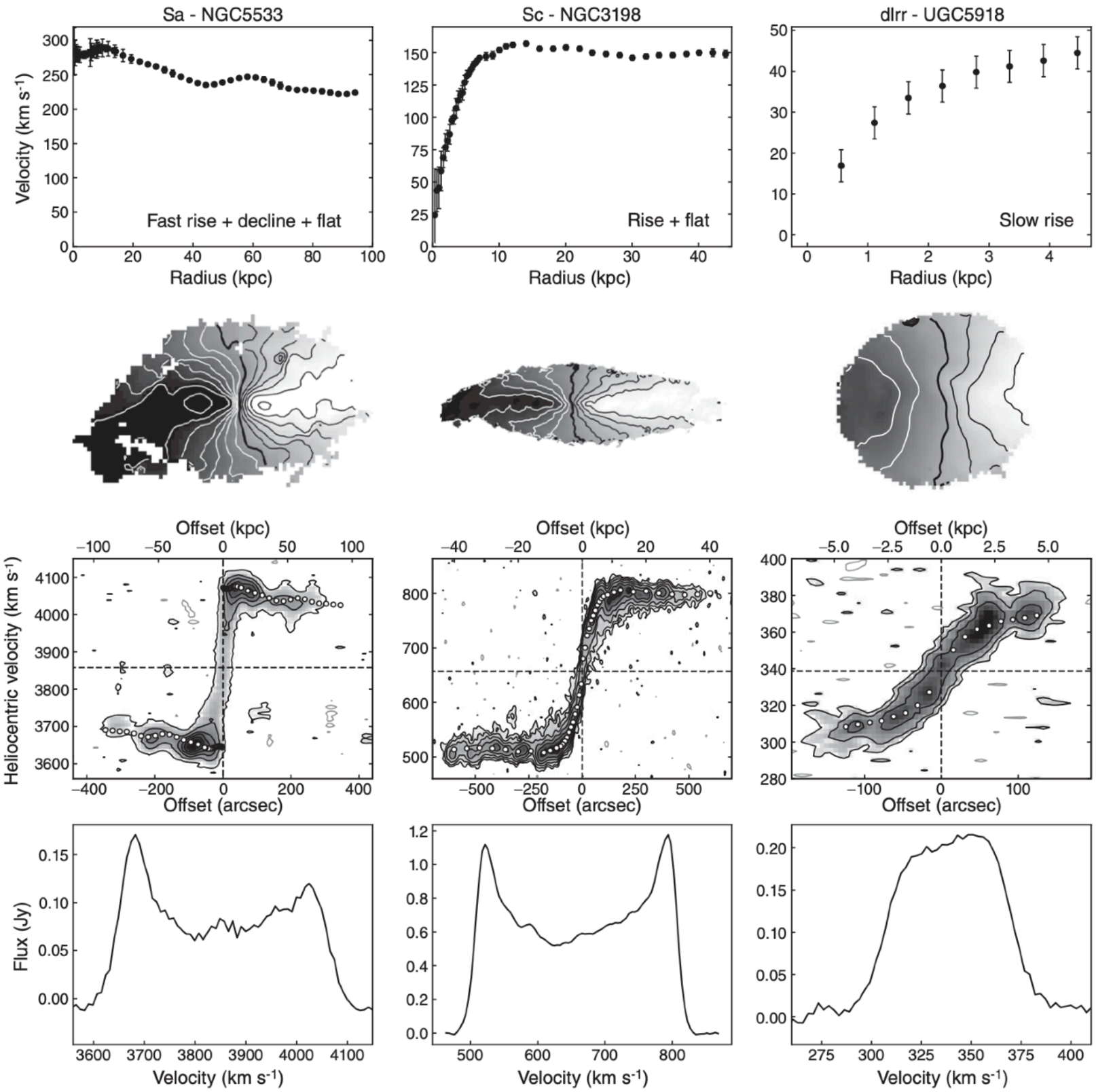
Illustris TNG Simulation (movie page)

Rotation curves



CFN §4.3.2

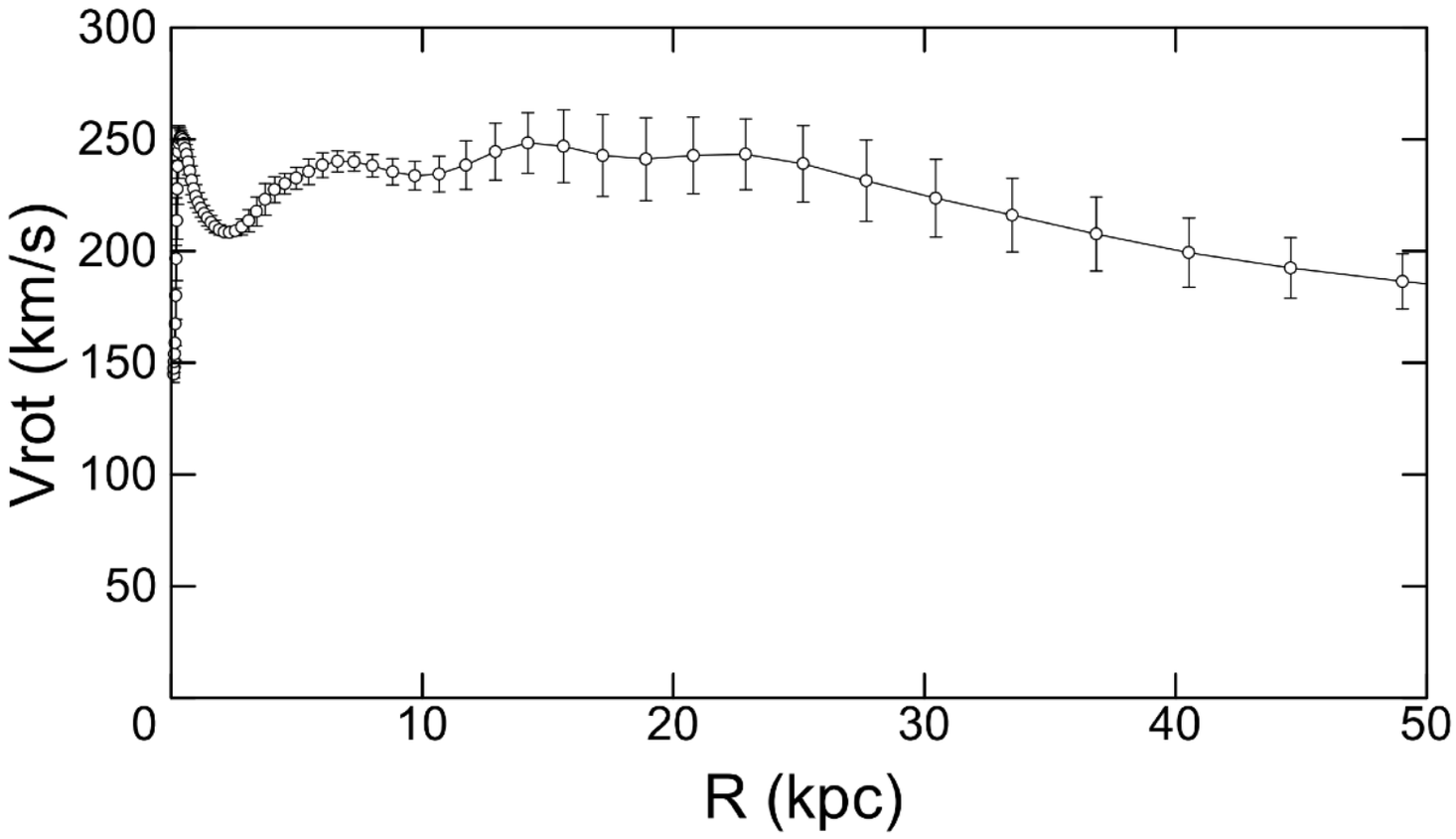
Rotation curves

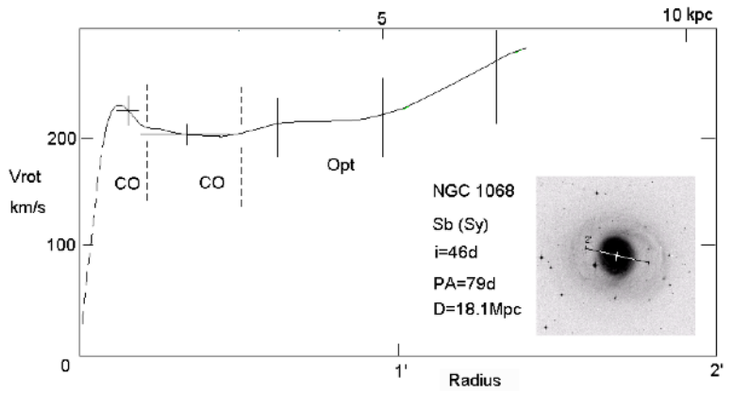


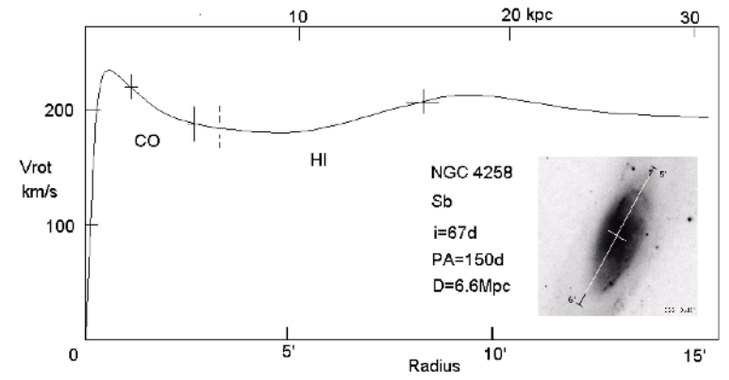
CFN §4.3.2

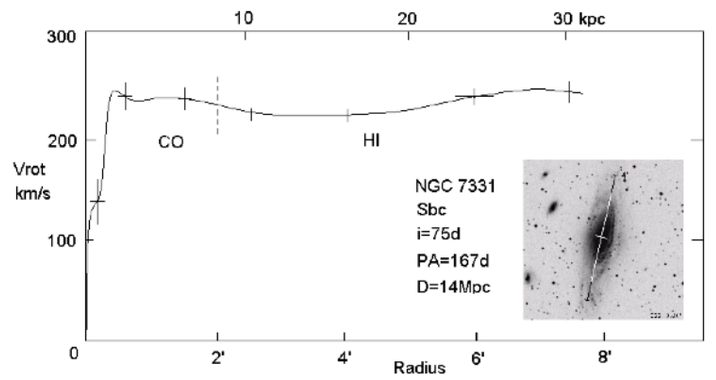
Rotation curves

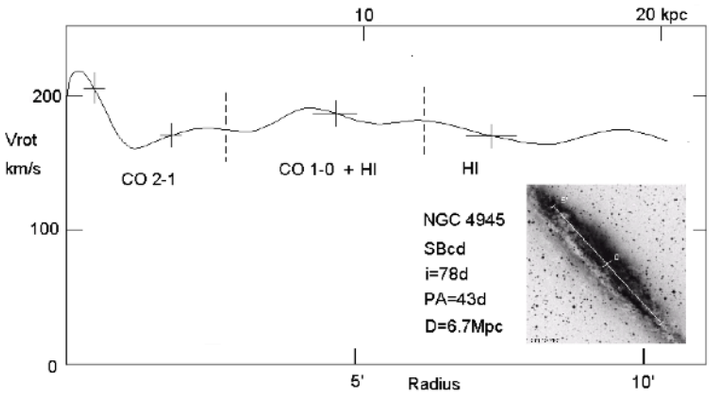
Milky Way rotation curve:





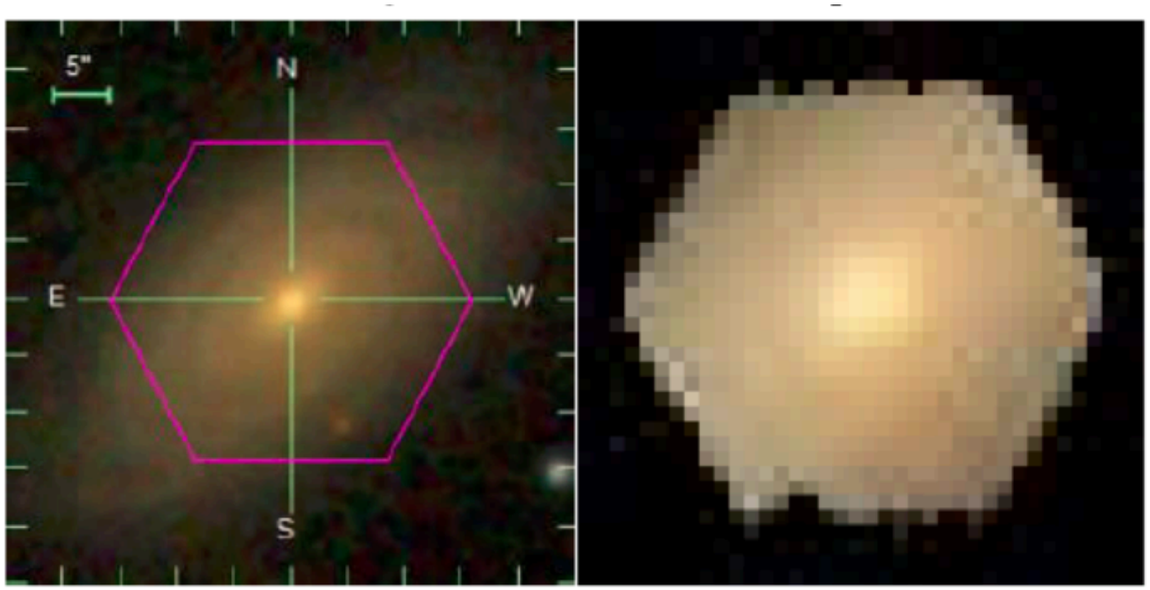


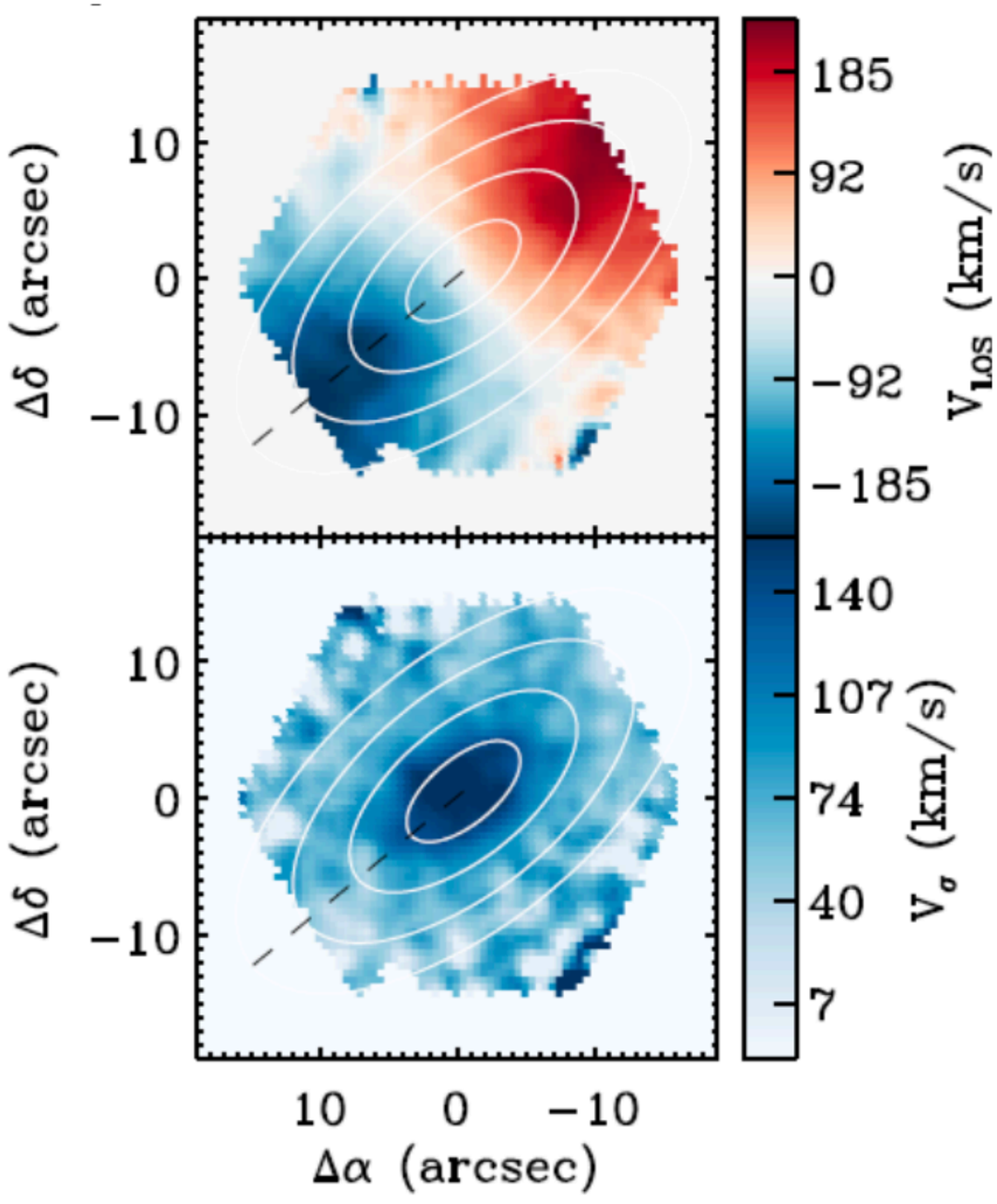


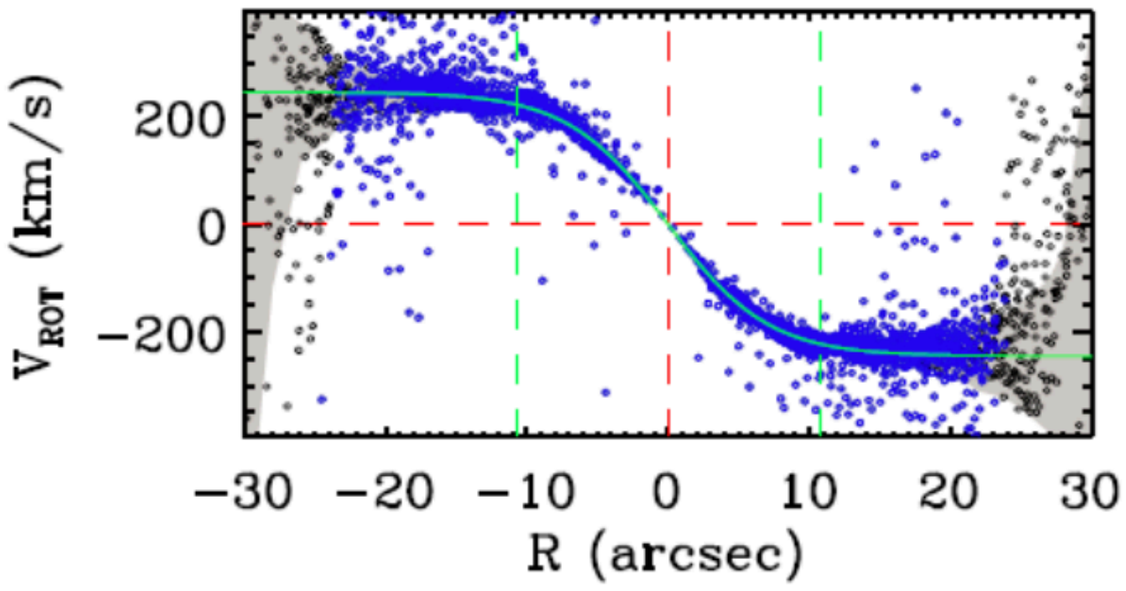


Sofue 2020

Rotation curves

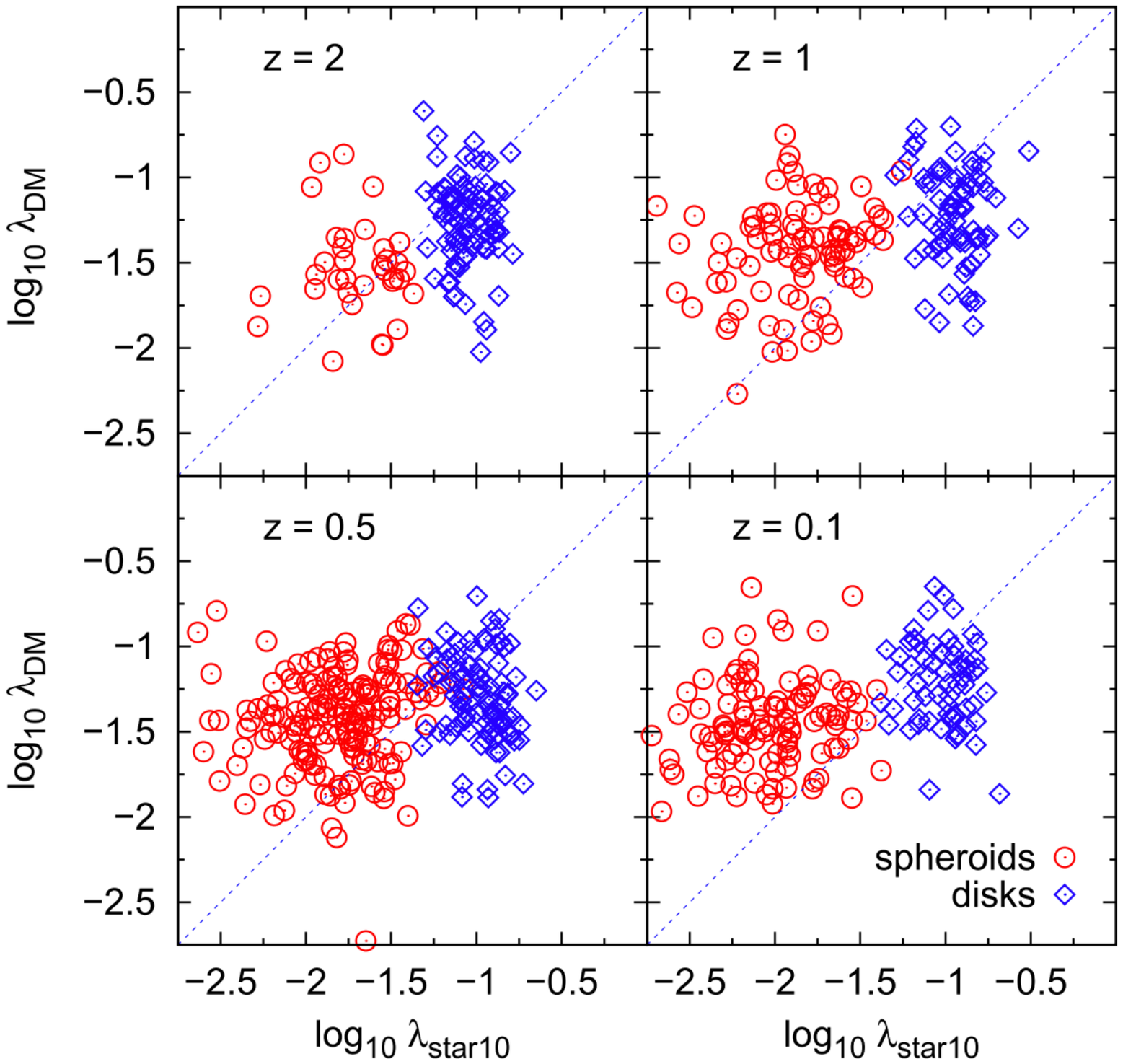






SDSS Manga survey

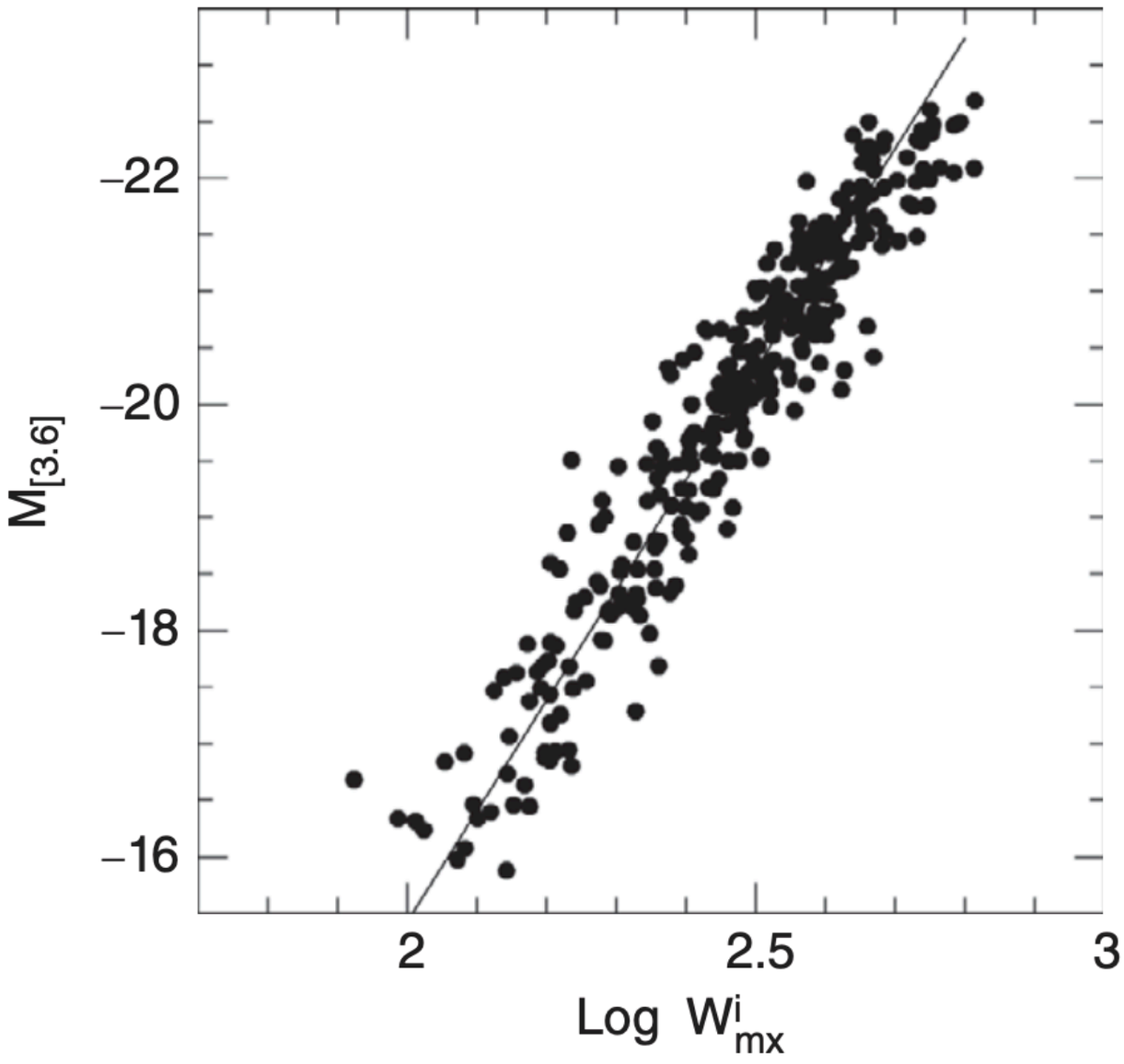
Angular momentum in halo and disk

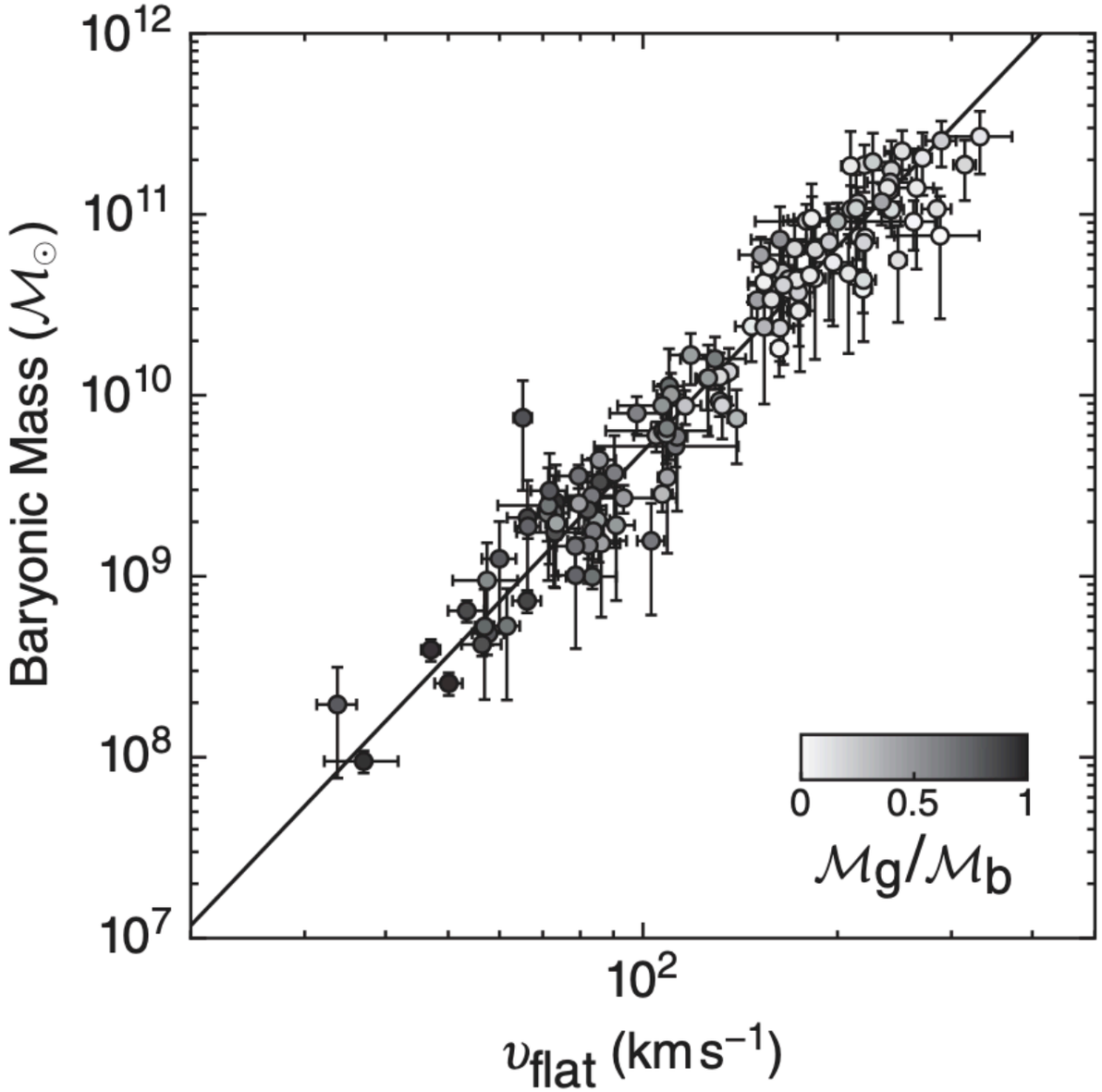


Teklu et al. 2015

§11.1.2 • The Tully-Fisher relation

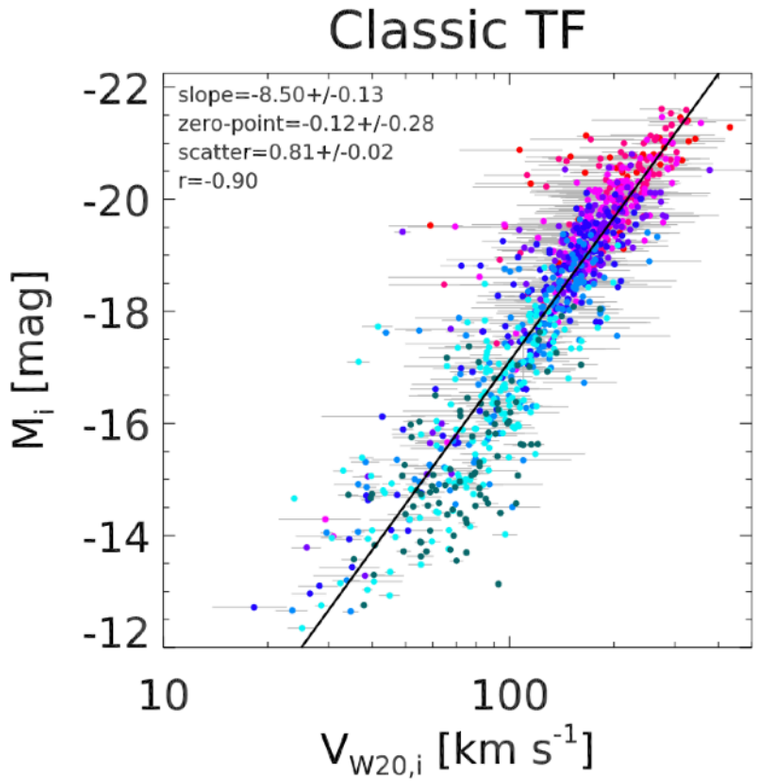
Tully-Fisher relation

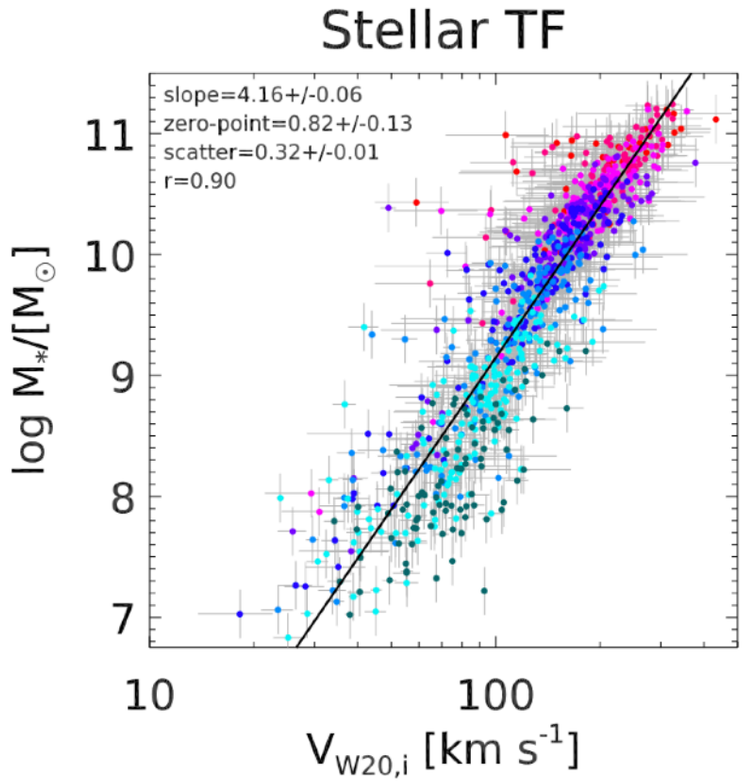


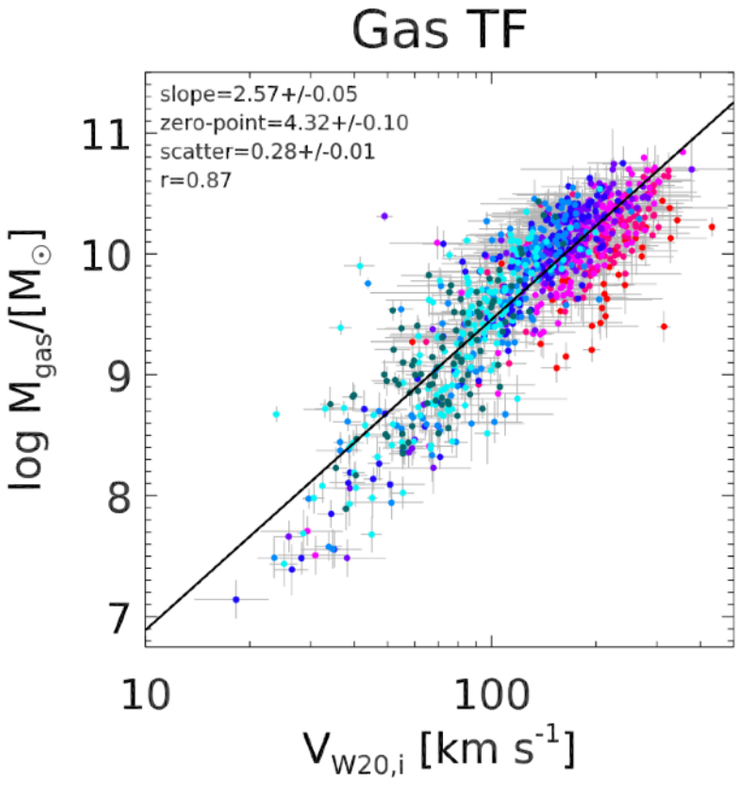


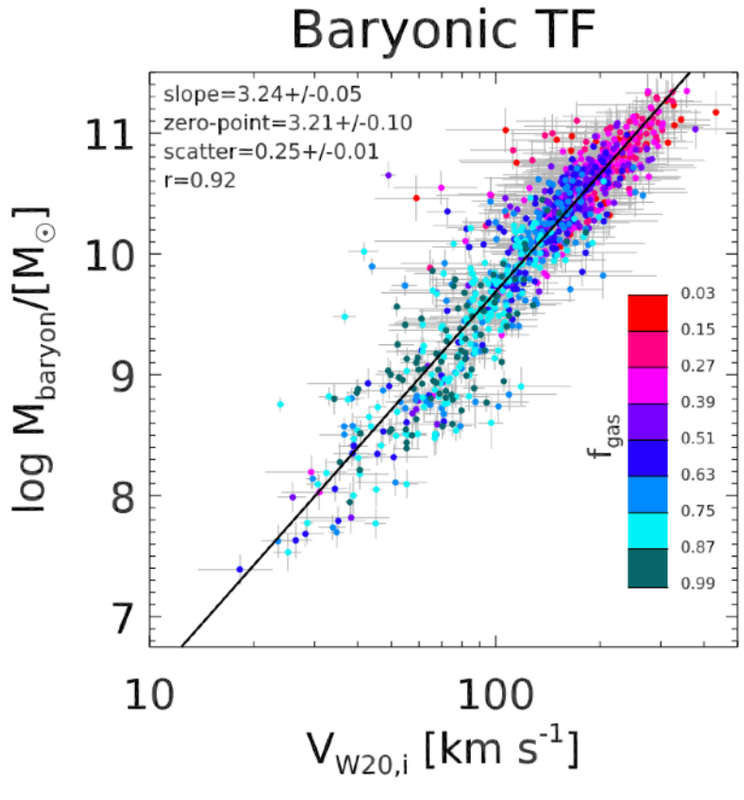
CFN §4.4.1

Tully-Fisher relation





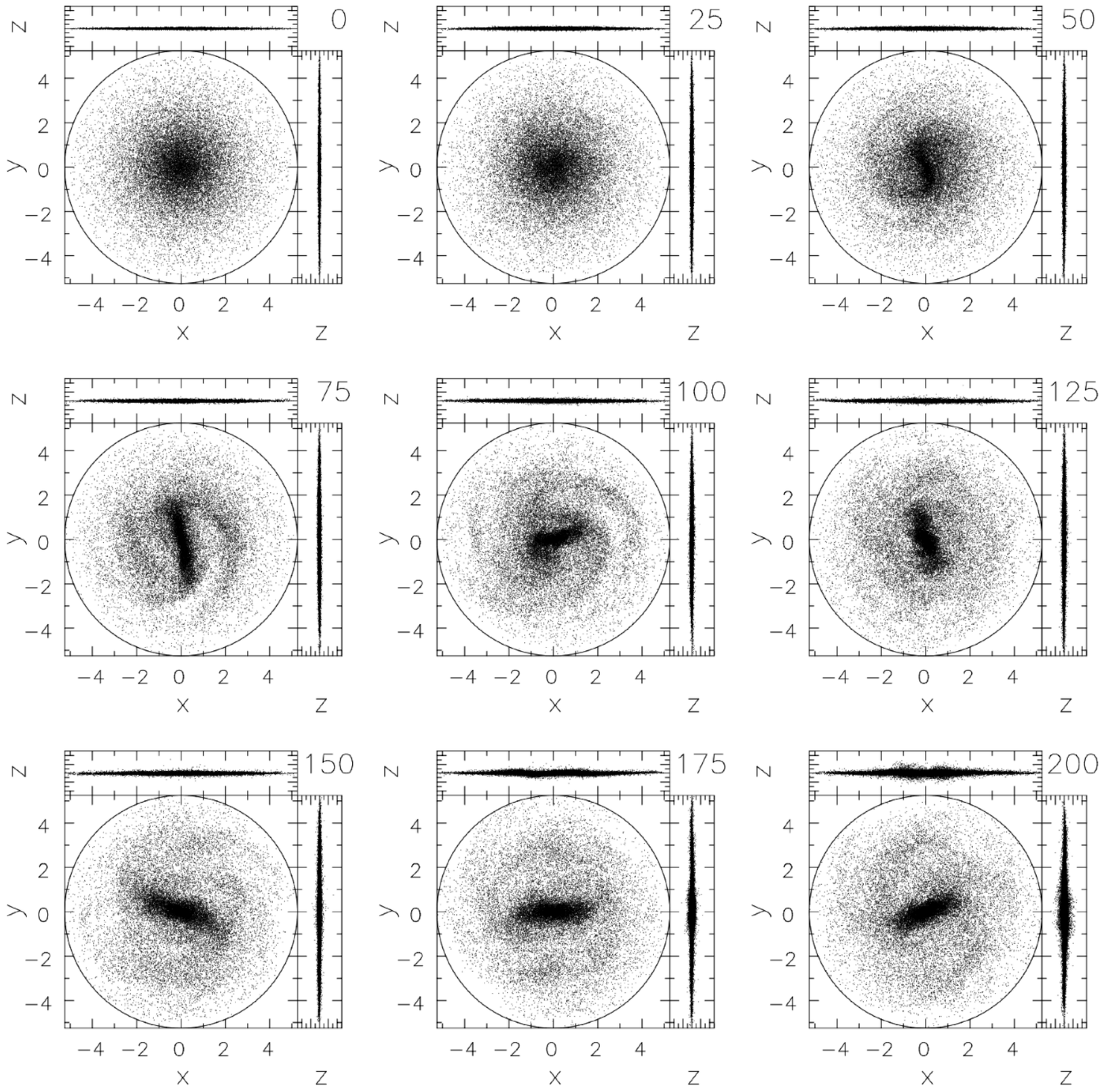




Bradford et al. 2016

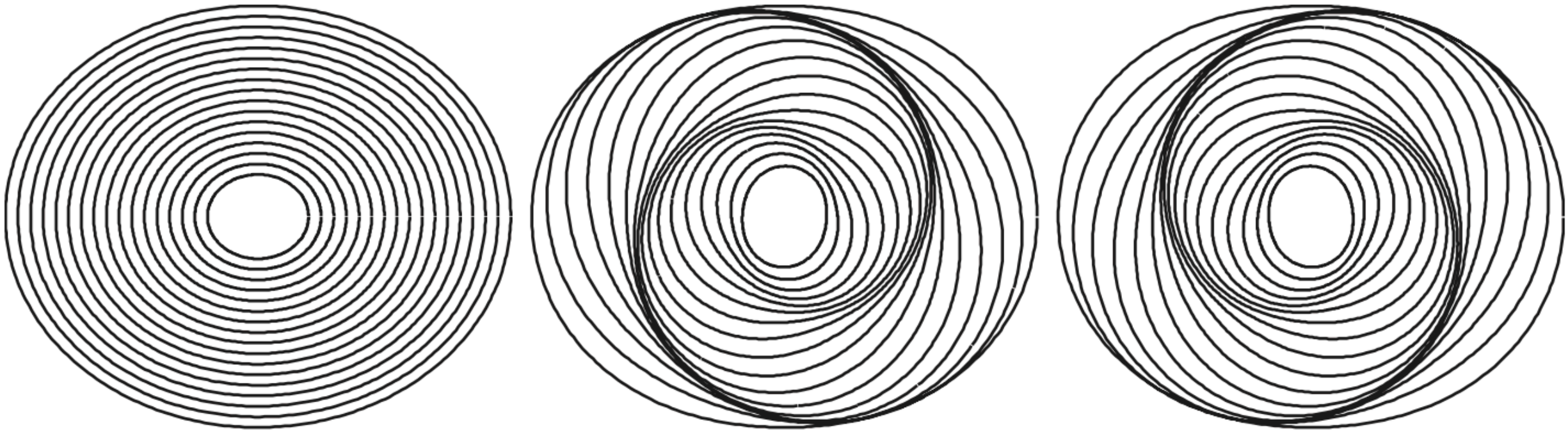
§11.1.3 • Instabilities

Bar instability formation

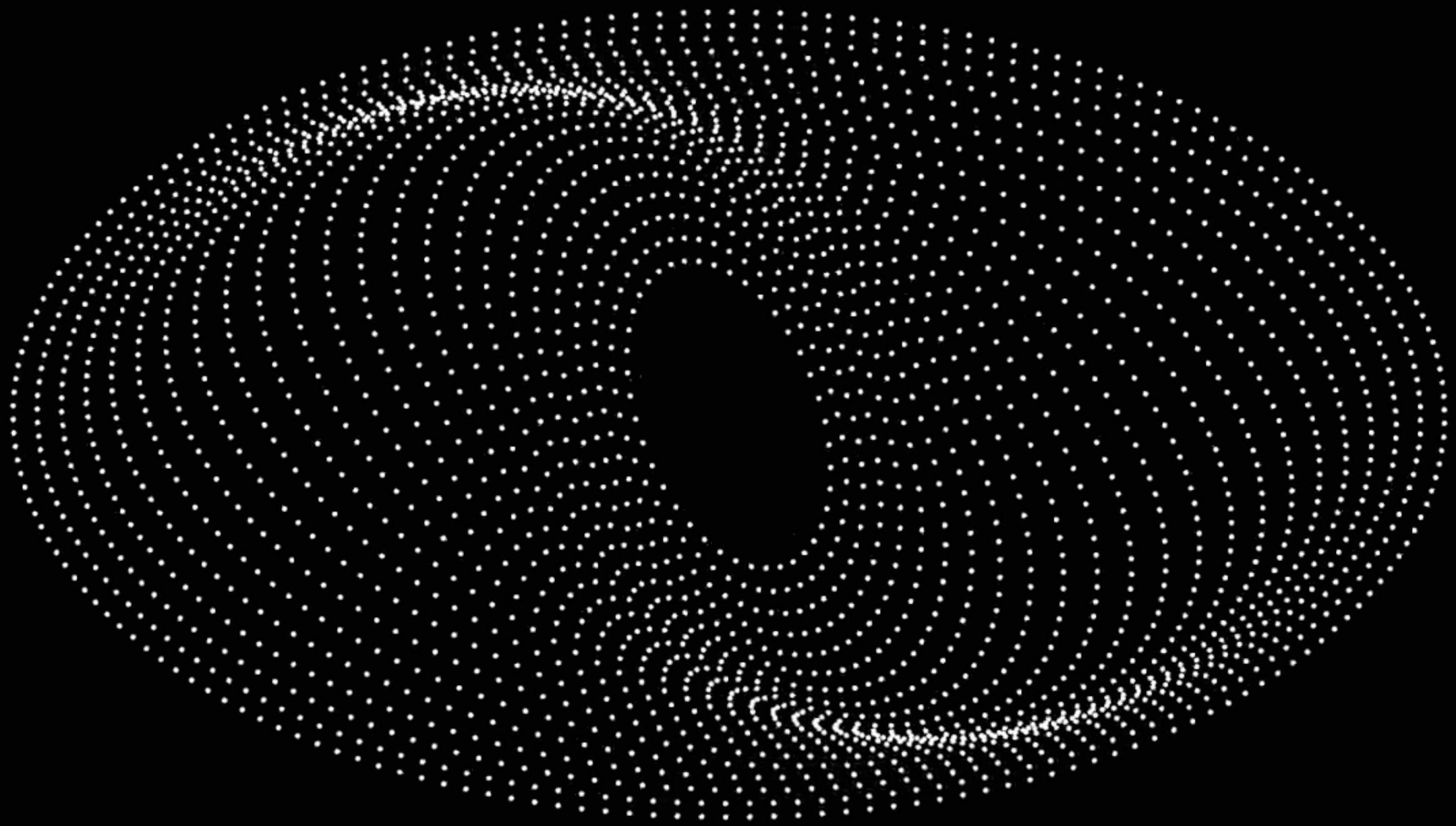


Binney & Tremaine §6.3

Spiral arm formation

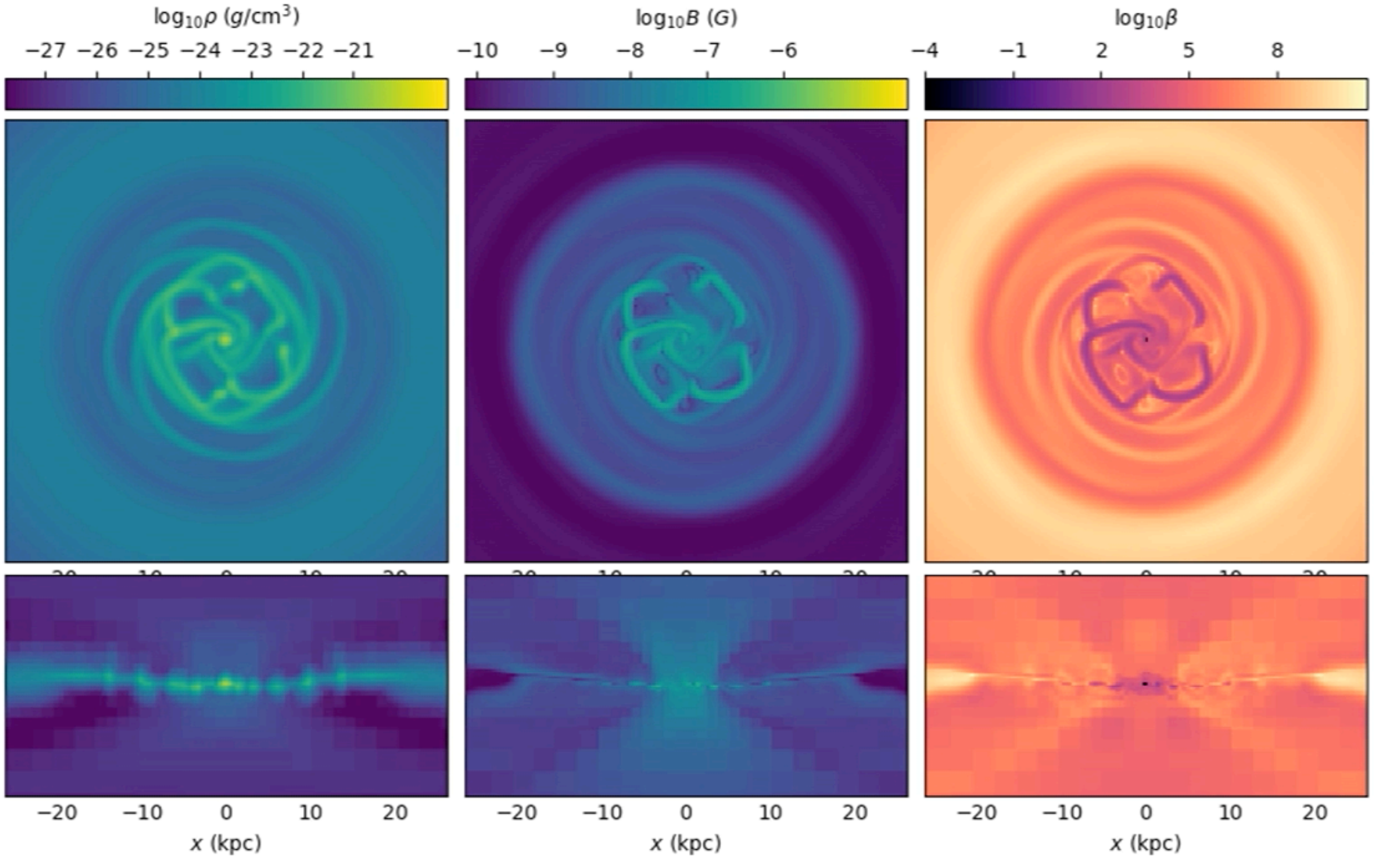


Spiral arms



Video by Kevin Pluck (youtube)

Spiral arm formation



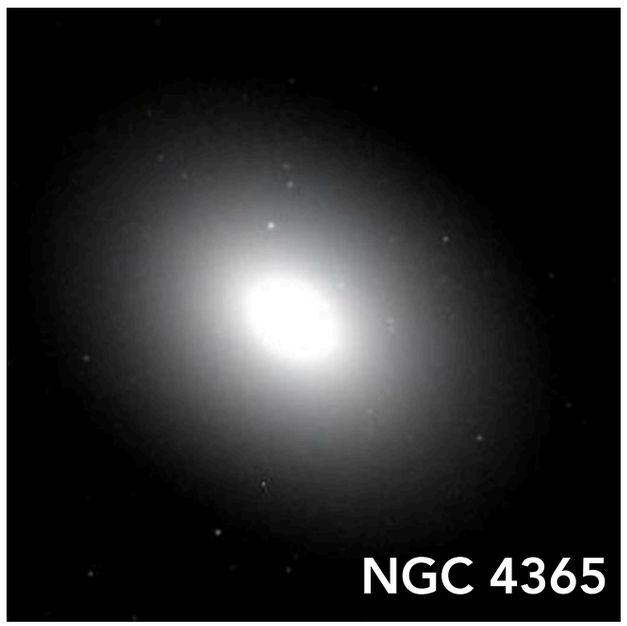
T = 290 Myr

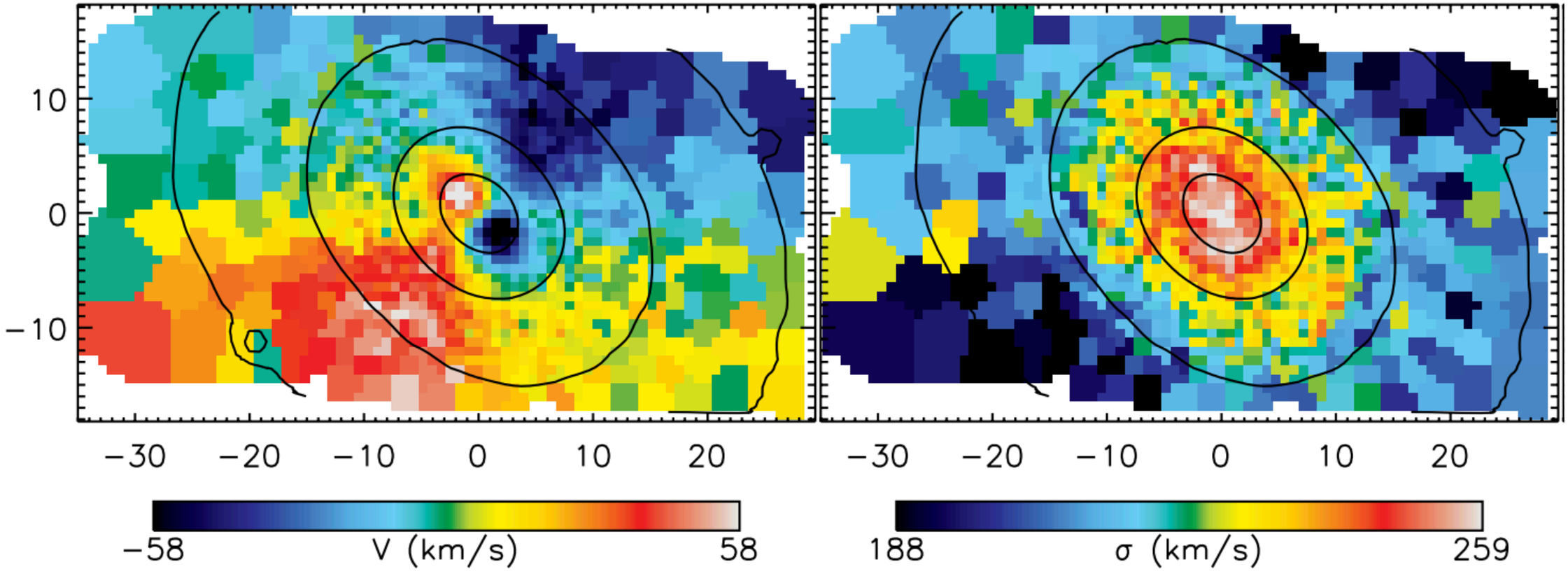
3 kpc/h

Video by Philip Hopkins (youtube)

§11.2 • Elliptical galaxies

Velocity dispersion in ellipticals





van den Bosch et al. 2008

Reading

- *CFN*
  - *11.1: §4.3, §4.4.1, §10.1-2*
  - *11.2: §5.1.2, §5.4, §10.3*
- *MvdBW*
  - *11.1:§2.3.3, §11.1-6*
  - *11.2: §2.3.2, §13.4*