

# INTERESTING CASE OF NGC 4473 GALAXY

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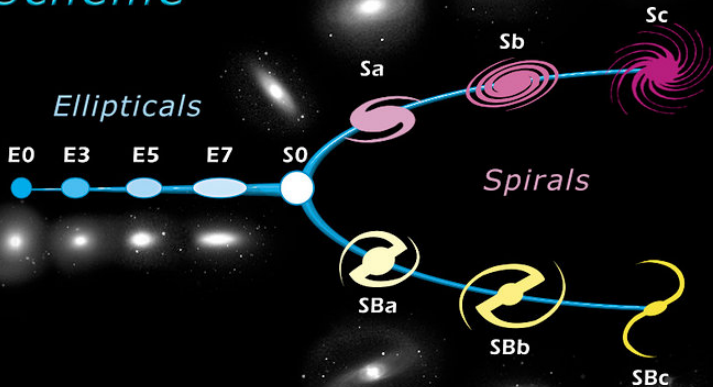
ASTRONOMICAL OBSERVATORY  
OF BELGRADE

12. 11. 2019.



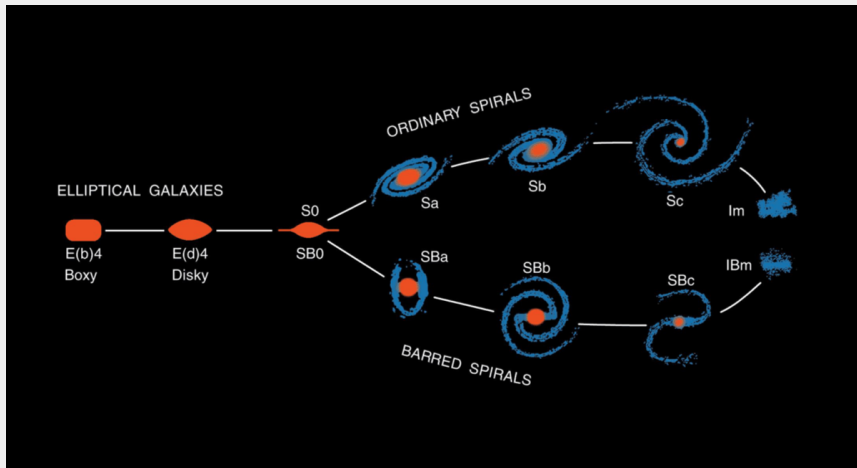
# THE MOST FAMOUS CLASSIFICATION SCHEME

## Edwin Hubble's Classification Scheme



# REVISED HUBBLE'S SCHEME

Kormendy & Bender 1996: ApJL, 464, 119



# REVISED HUBBLE'S SCHEME

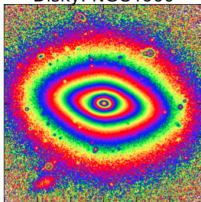
Kormendy & Bender 1996: ApJL, 464, 119

ELLIPTICAL GALAXIES

  
E(b)4  
Boxy

  
E(d)4  
Disky

Disky: NGC4660



Boxy: NGC5322

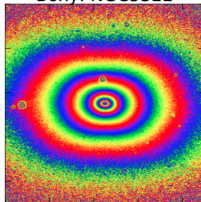
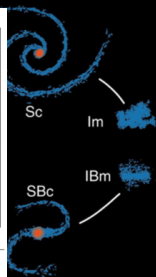


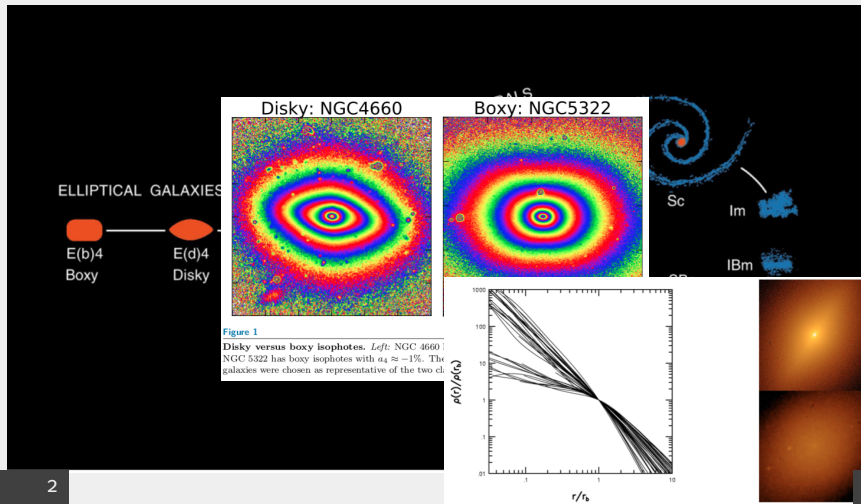
Figure 1

**Disky versus boxy isophotes.** *Left:* NGC 4660 has disky isophotes with  $a_4 \approx 3\%$ . *Right:* NGC 5322 has boxy isophotes with  $a_4 \approx -1\%$ . The photometry is taken from the SDSS. These galaxies were chosen as representative of the two classes in Bender et al. (1988).



# REVISED HUBBLE'S SCHEME

Kormendy & Bender 1996: ApJL, 464, 119



# INTEGRAL FIELD SPECTROSCOPY – IFS

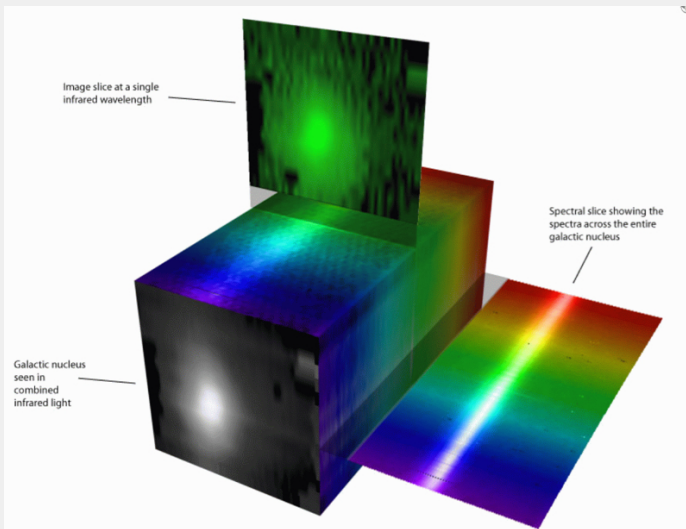
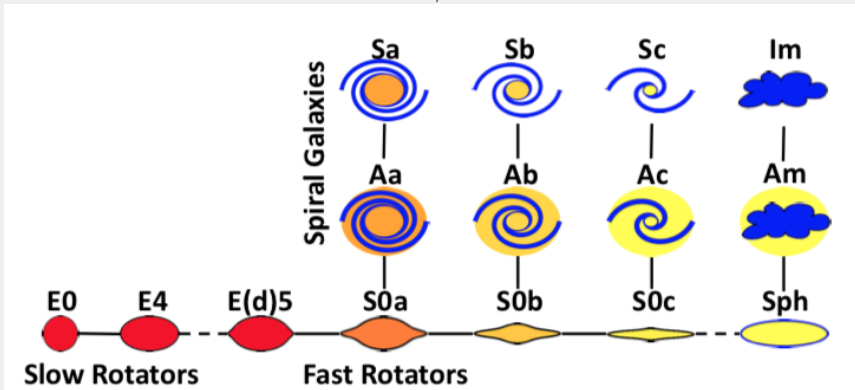


Image credit: Stephen Todd (ROE) and Douglas Pierce-Price (JAC)

# REREVISED HUBBLE'S SCHEME

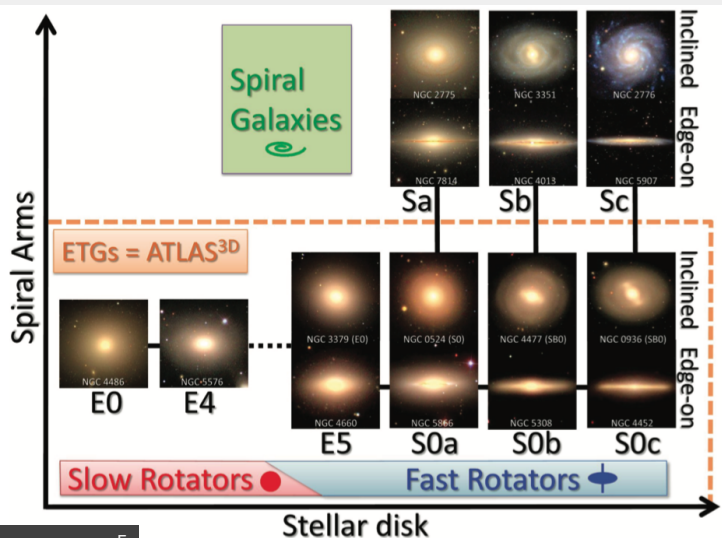
Cappellari+ 2011: MNRAS 416, 1680

$$\epsilon = 1 - b/a = 0.4$$



# REREVISED HUBBLE'S SCHEME

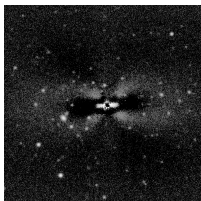
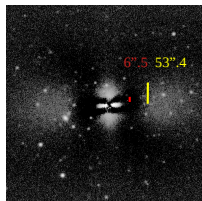
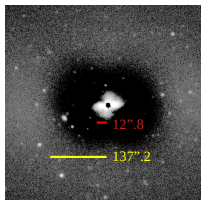
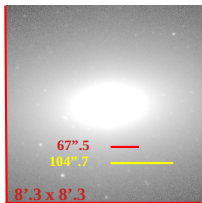
Cappellari+ 2011: MNRAS 416, 1680





# NGC 4473: V-BAND IMAGE (1.4M MILANKOVIĆ TELESCOPE)

GALFIT – Peng et al. 2010: AJ, 139, 2097



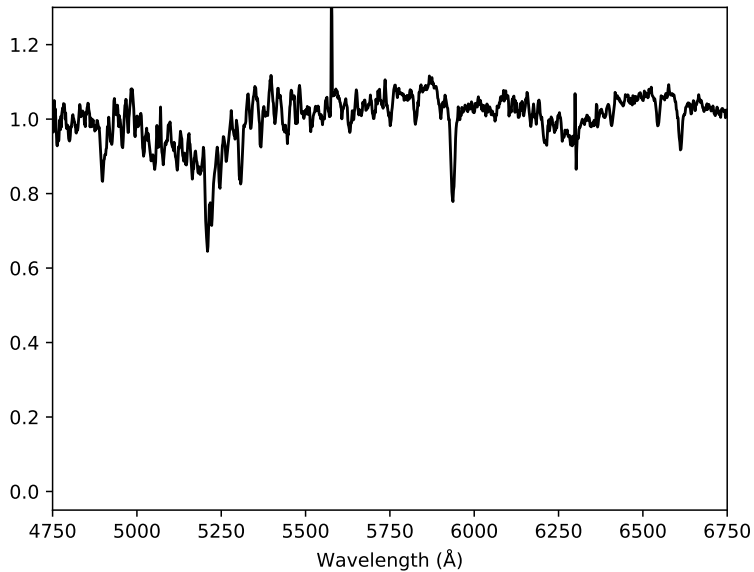
$$I(R) = I_{\text{eff}} \exp^{-\kappa_n \left[ \left( \frac{R}{R_{\text{eff}}} \right)^{1/n} - 1 \right]}$$

$$\mu(R) = \mu_{\text{eff}} + \frac{2.5\kappa_n}{\ln(10)} \left[ \left( \frac{R}{R_{\text{eff}}} \right)^{1/n} - 1 \right]$$

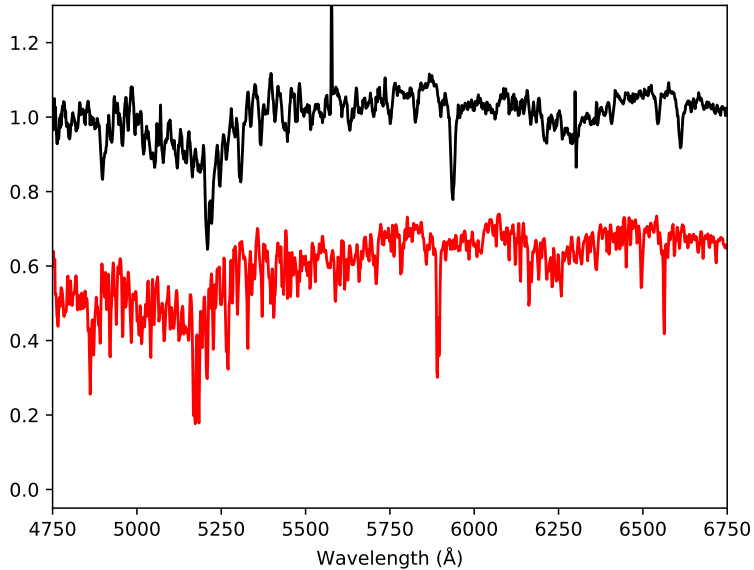
#	$\mu_{\text{eff}} \left[ \frac{\text{mag}}{(\text{''})^2} \right]$	$R_{\text{eff}} [\text{''}]$	n
1	22.2	67.5	1
2	19.0	12.8	2.7
3	20.2	6.5	1

**Table:** Three Sersic components

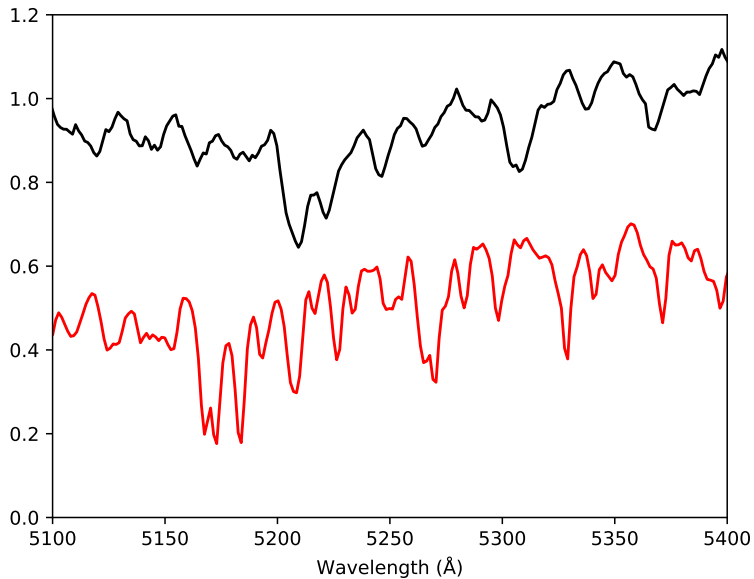
# 1D SPECTROSCOPY



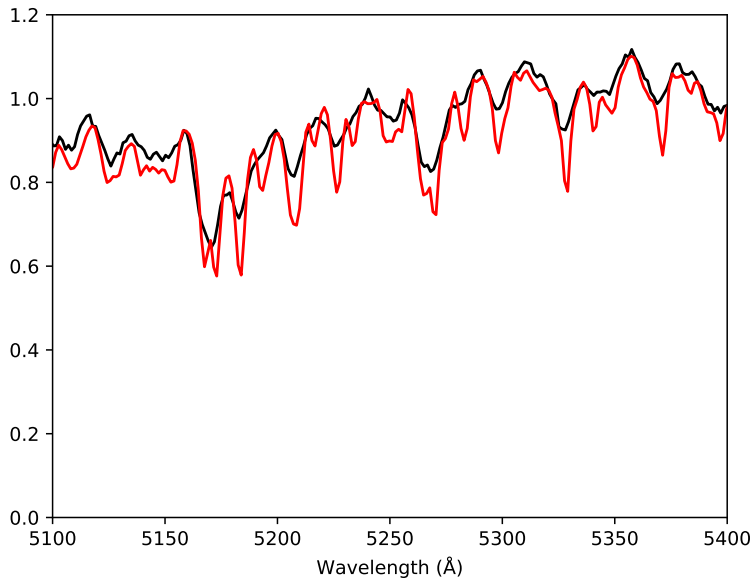
# 1D SPECTROSCOPY



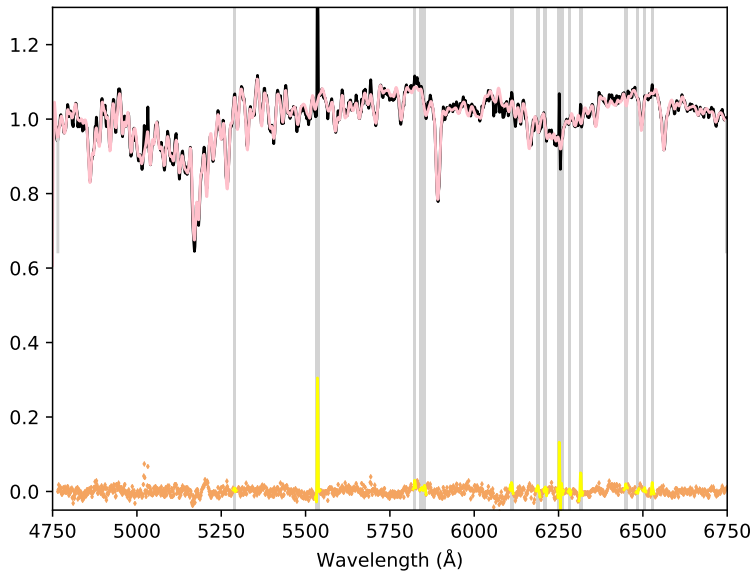
# 1D SPECTROSCOPY



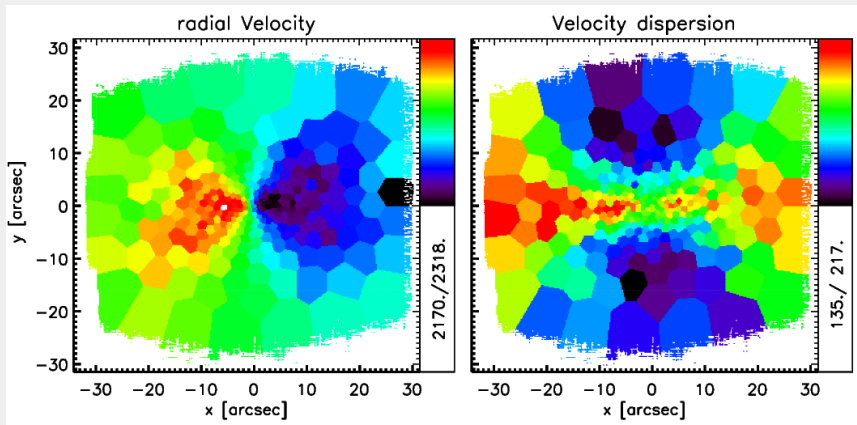
# 1D SPECTROSCOPY



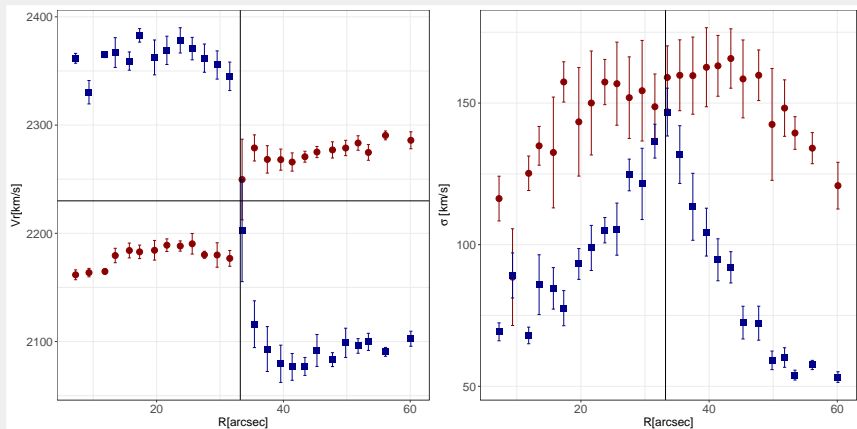
# 1D SPECTROSCOPY: pPXF (CAPPELLARI+ 2018)



# MUSE KINEMATICS OF NGC 4473 – SINGLE COMPONENT

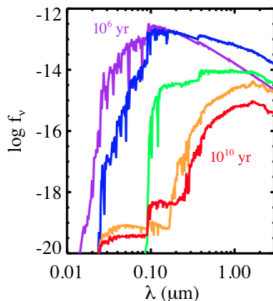
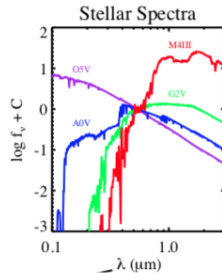
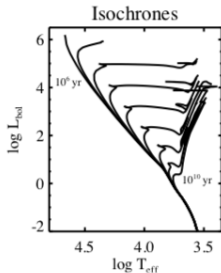
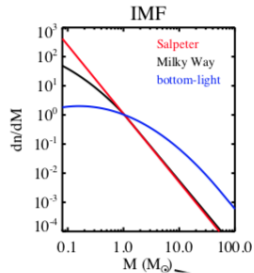


# MUSE KINEMATICS OF NGC 4473 – TWO COMPONENTS



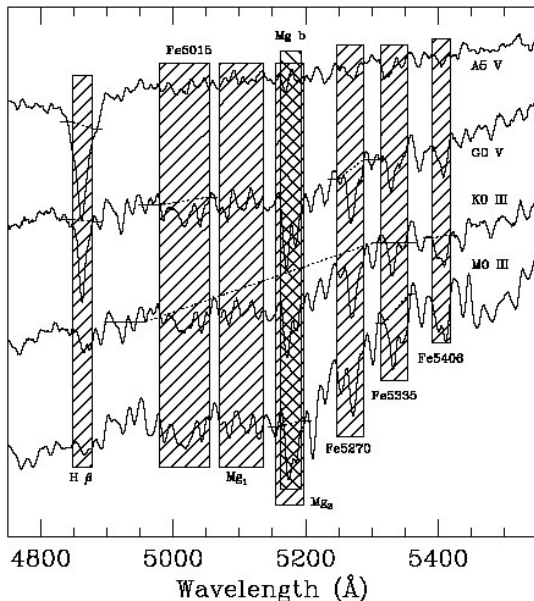


# SIMPLE STELLAR POPULATION - SSP



# LICK INDICES

Relative Flux

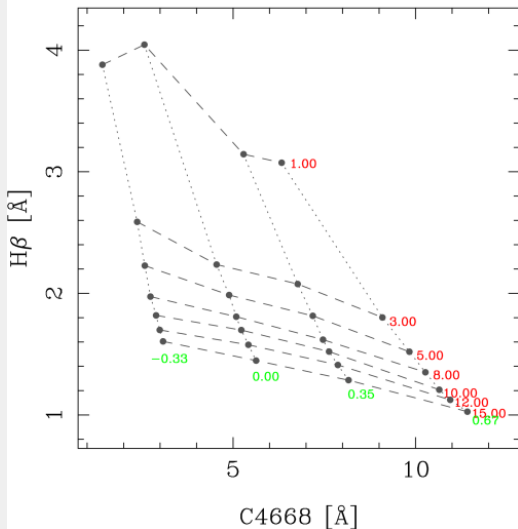


25 Lick indices

Worthey 1994

Worthey & Ottaviani 1997

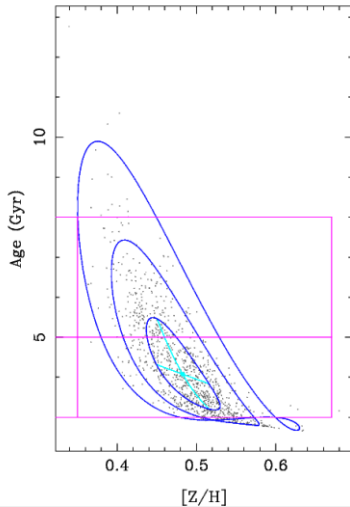
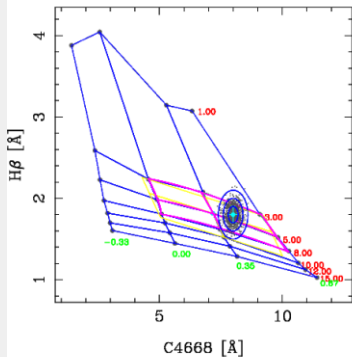
Thomas, Maraston & Bender (2003)



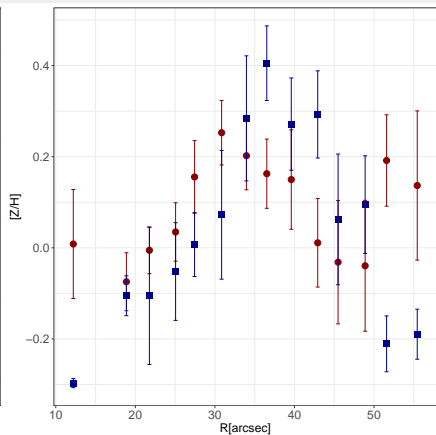
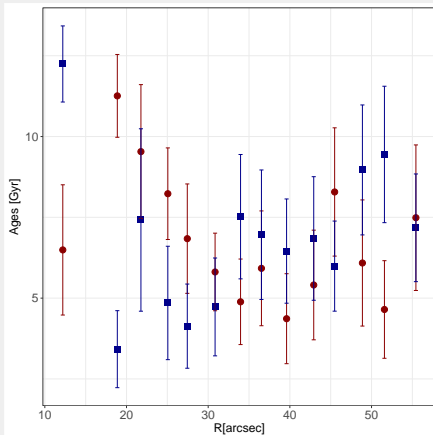
# SINGLE SPECTRUM MODELLING

Thomas, Maraston & Bender (2003)

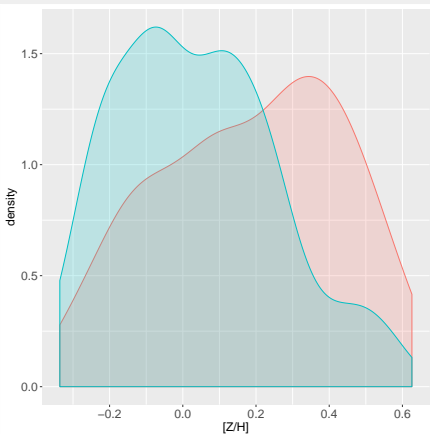
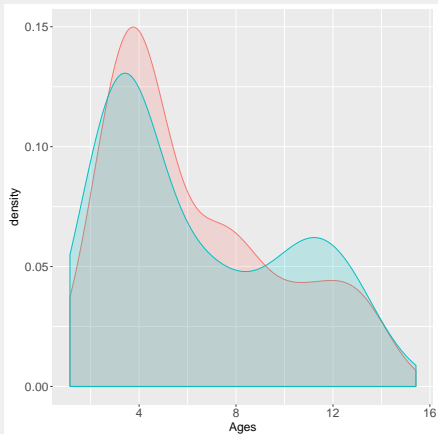
Thomas, Maraston & Bender (2003)



# AGES AND METALLICITIES



# DENSITY DISTRIBUTIONS - QUEST FOR BIMODALTY



# GIST (GALAXY IFU SPECTROSCOPY TOOL) PIPELINE

<https://abittner.gitlab.io/thegistpipeline/>  
Bittner+ 2019 (arXiv:1906.04746B)

