

*Kinematics in double-barred galaxies with SAURON*

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Double-barred  
galaxies are  
structurally  
complex



3D

spectroscopy



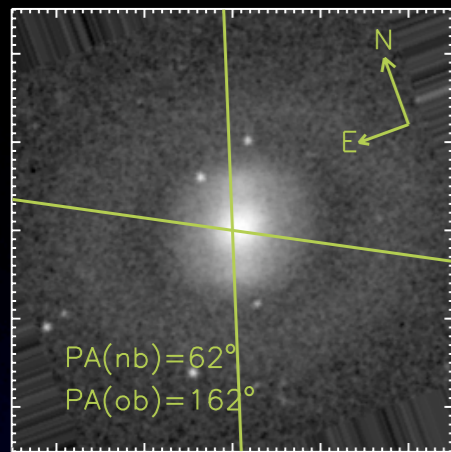
SAURON

NGC 5850

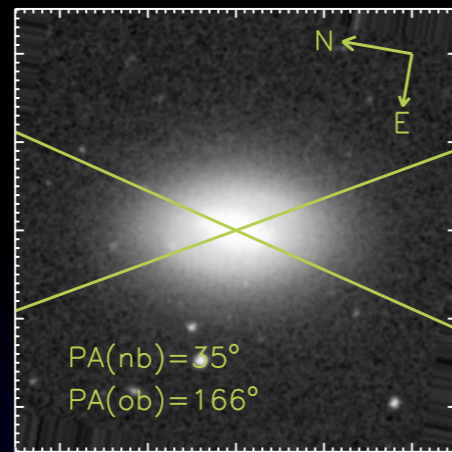


# Kinematics in double-barred galaxies with SAURON

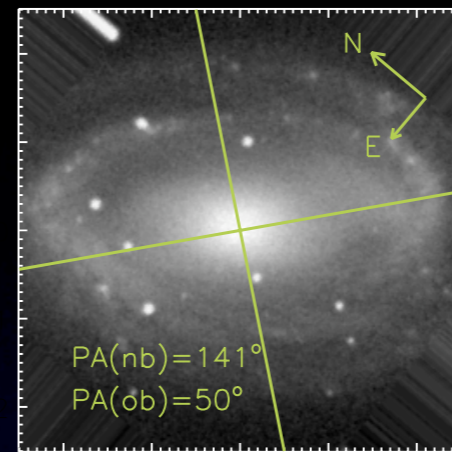
Adriana de Lorenzo-Cáceres Rodríguez



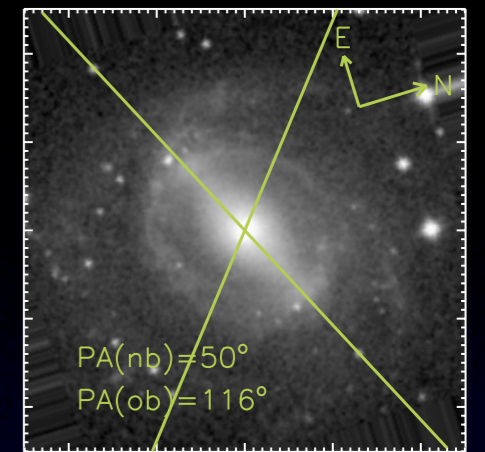
NGC2859 - (R)SB(r)0<sup>+</sup>



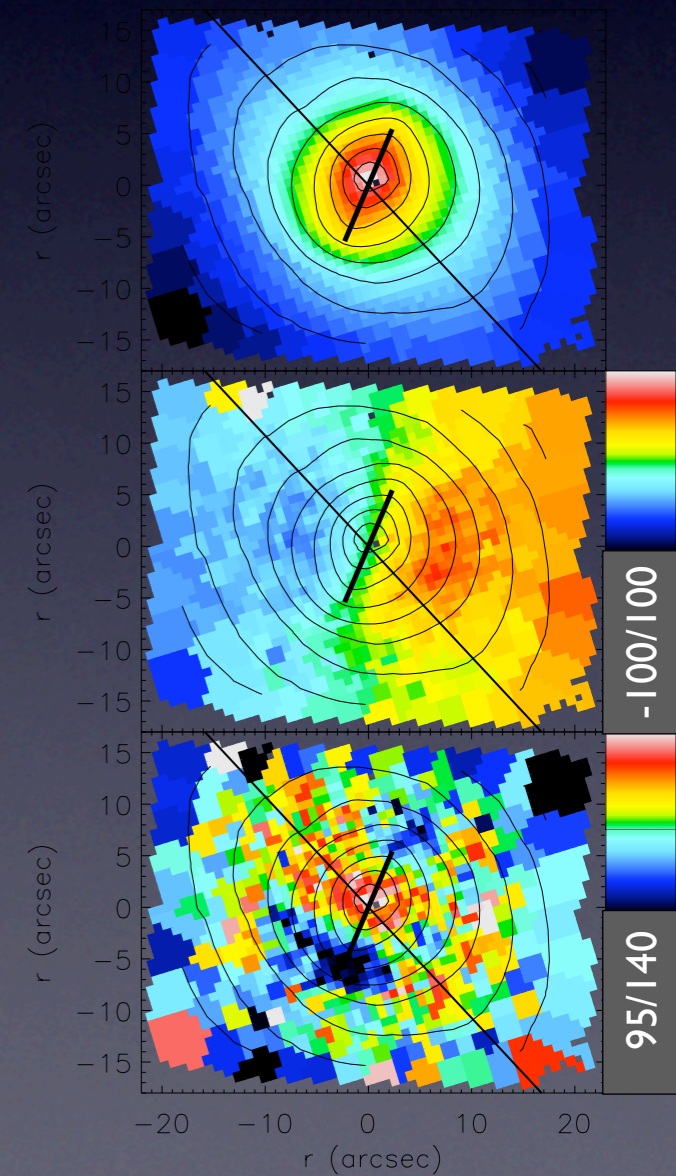
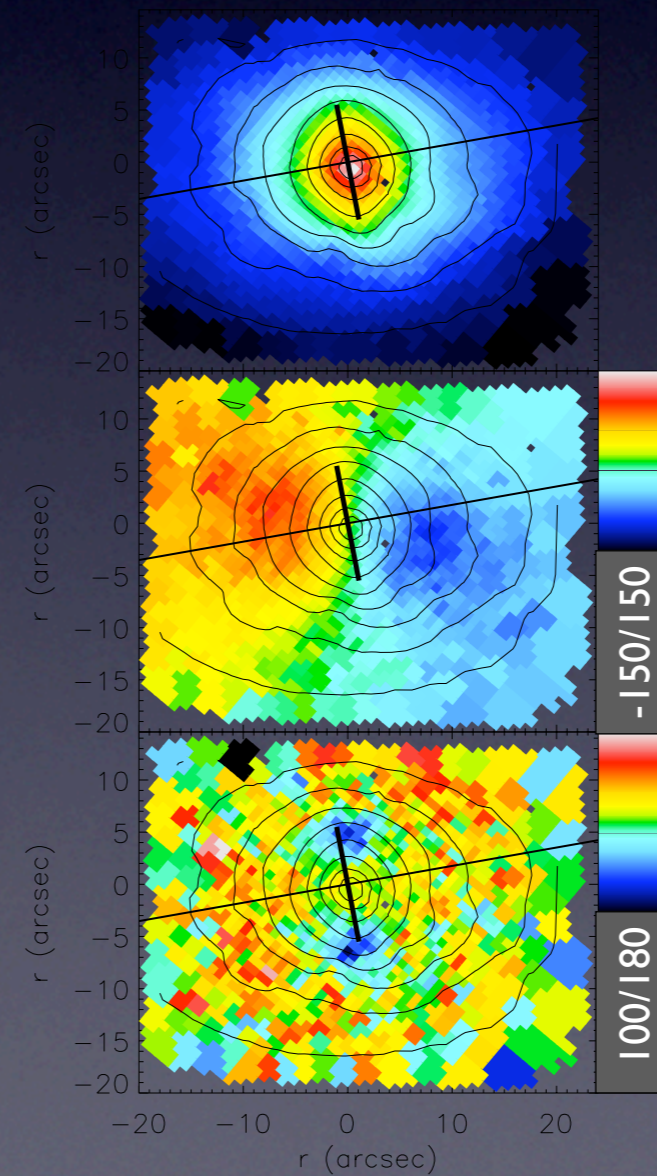
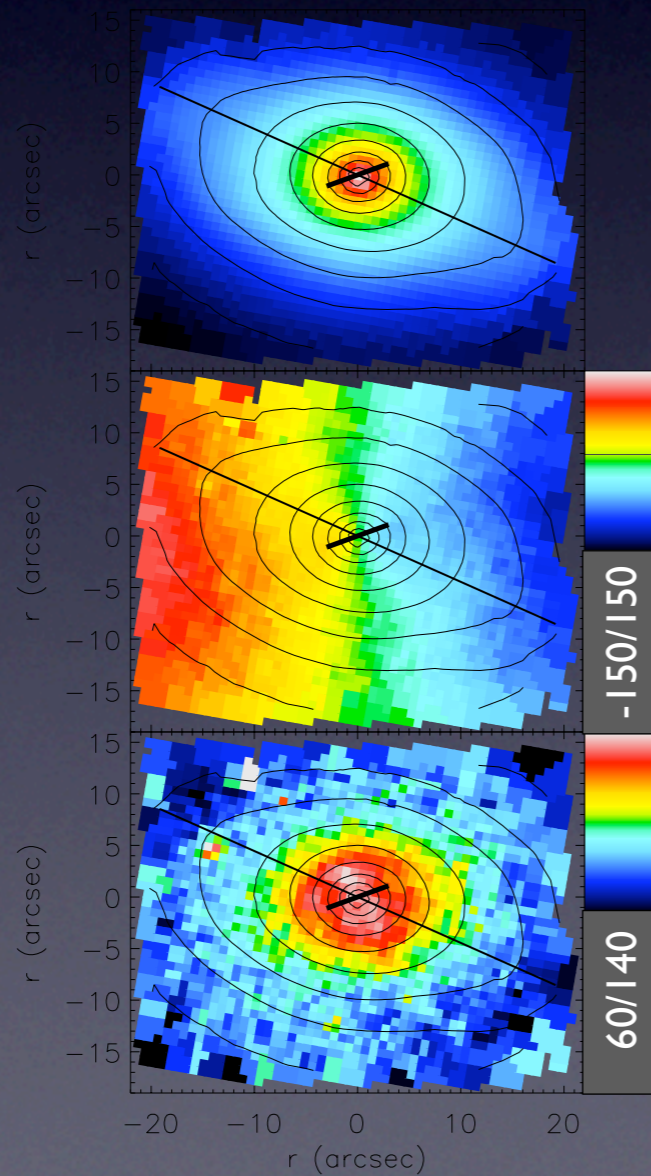
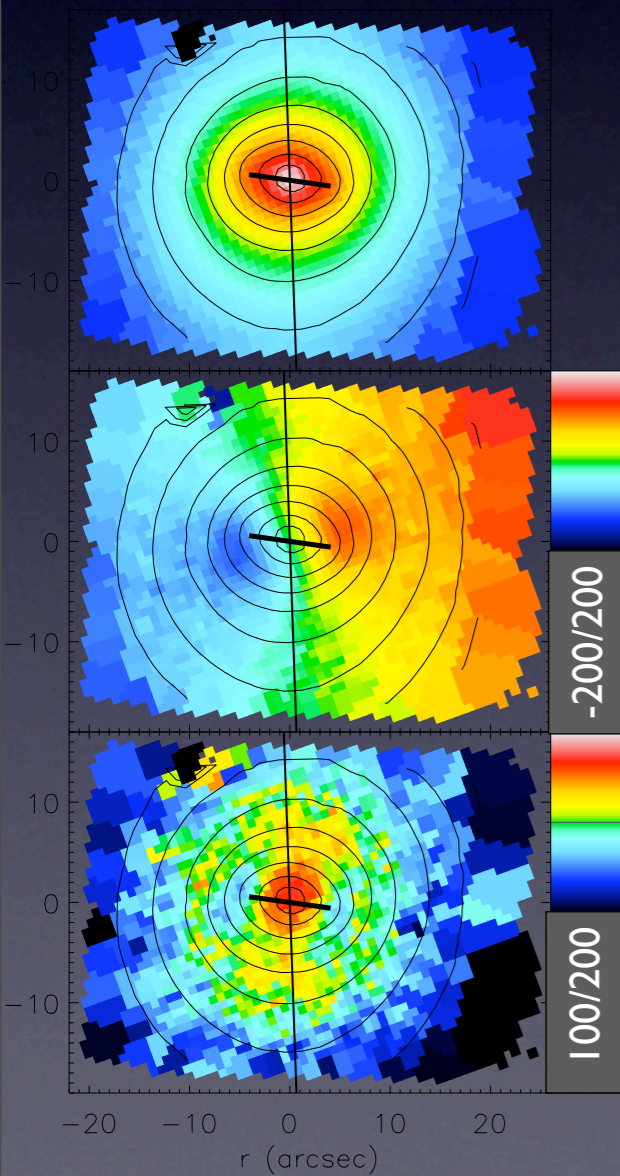
NGC3941 - SB(s)0<sup>0</sup>



NGC4725 - SAB(r)ab



NGC5850 - SB(r)b



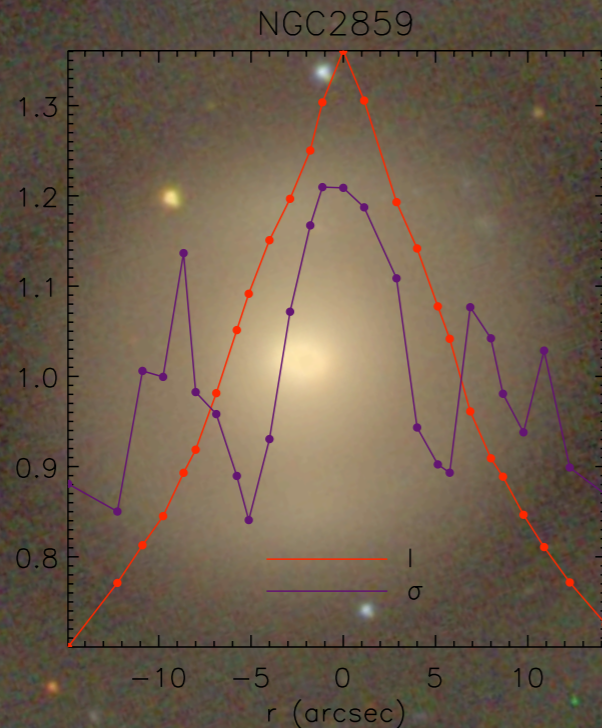


# The $\sigma$ -hollows

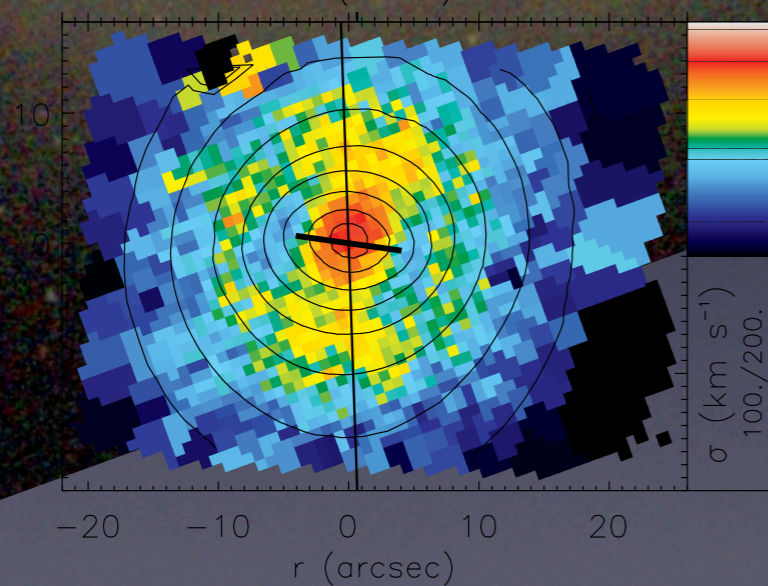
## NGC 2859

- Found in the four galaxies
- Amplitudes between 10 and 40  $\text{km s}^{-1}$

velocity dispersion and  
intensity cuts  
along the inner bar



$\sigma$  map  
[100,200]  $\text{km s}^{-1}$





# The $\sigma$ -hollows

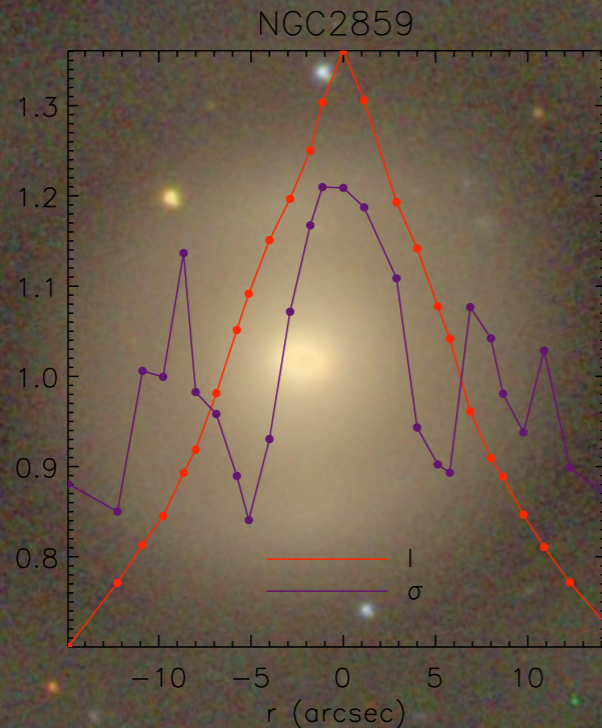
NGC 2859

- Found in the four galaxies
- Amplitudes between 10 and 40  $\text{km s}^{-1}$

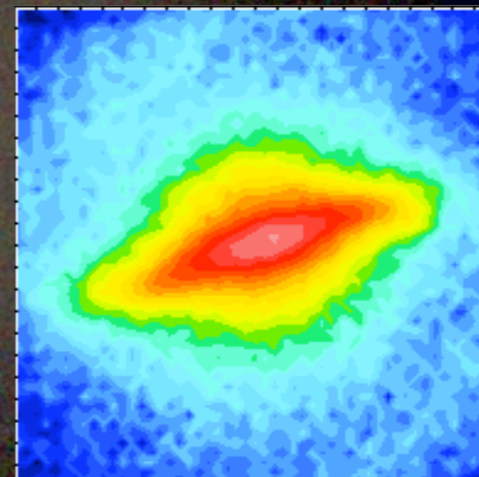
## Numerical simulations

- Just bulge + bar + disc

velocity dispersion and  
intensity cuts  
along the inner bar

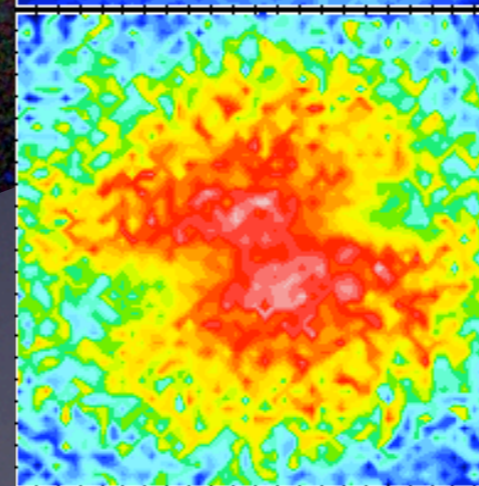


inc=30° PA=20°

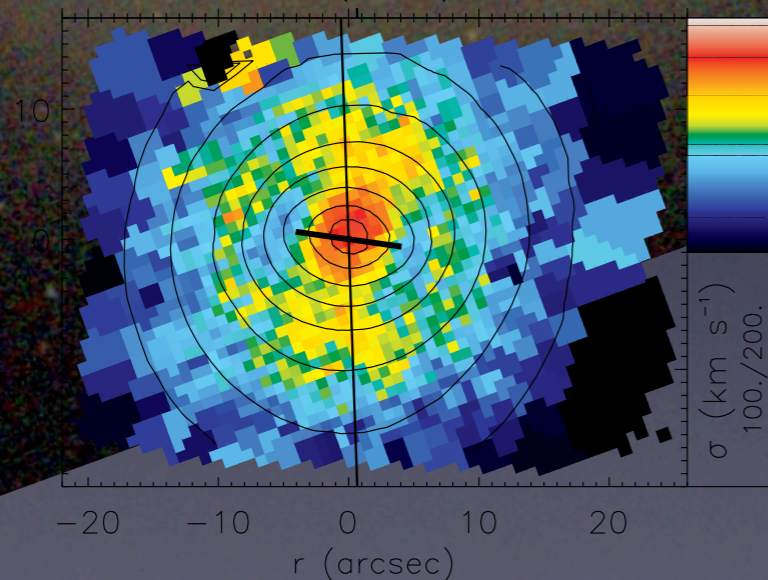


isodensity contours

$\sigma$  map



$\sigma$  map  
[100,200]  $\text{km s}^{-1}$





## The $\sigma$ -hollows

- **Why?**

*Due to the contrast in velocity dispersions between the bulge (high  $\sigma$ ) and the inner bar (low  $\sigma$ )*

- **Where?**

*At the edges of the inner bar, where the bulge is not totally dominating the flux*

- **How?**

*The amplitudes of the  $\sigma$ -hollows will depend on the relative contribution of the bulge to the total luminosity and to the difference of velocity dispersions between the bulge and the inner bar*

The origin of the  $\sigma$ -hollows is simply a matter of contrast

**INNER BARS ARE COLD STRUCTURES**

Thanks