Turbulence in the interstellar medium
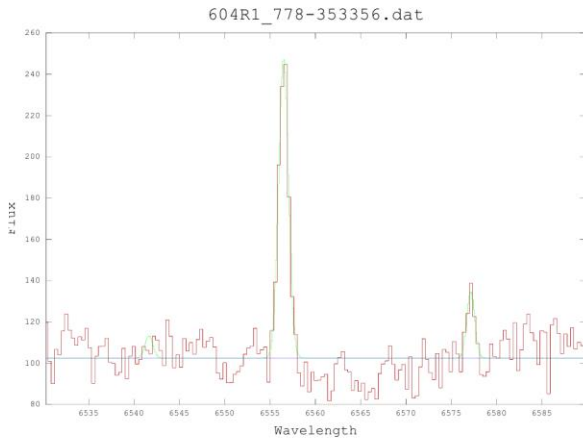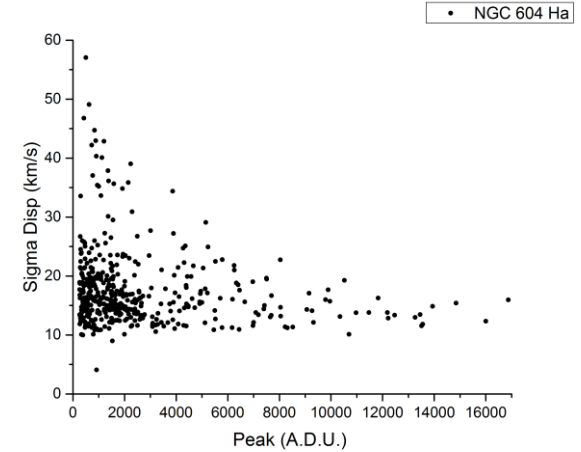
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Cloudy Workshop 2017, INAOE

We use long slit spectral observations to apply one (I) and two point (II) statistics to the radial velocity field of giant extragalactic HII regions and use them to extract turbulent motions of the ionized cloud.
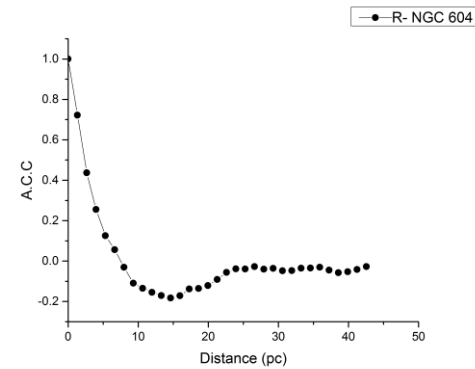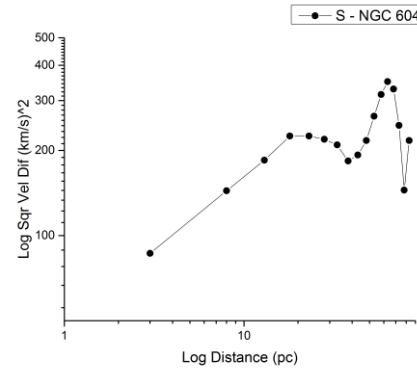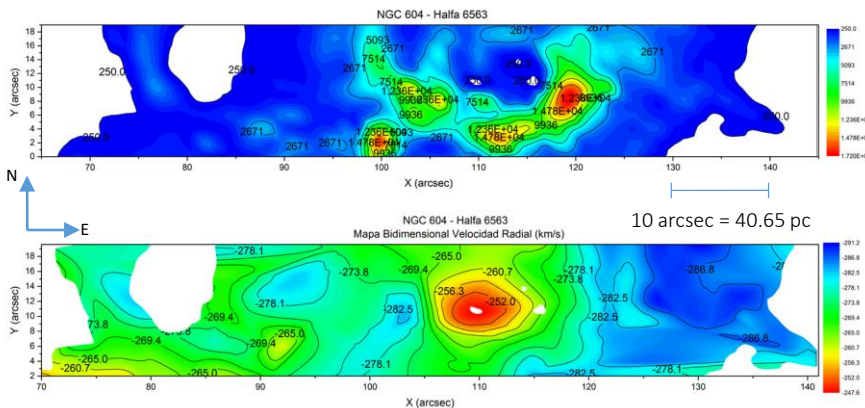
Research interests:

- Turbulence in the ISM
- Stellar wind and stellar bubbles

- Shock and ionization fronts
- Dynamics of HII regions: Blowout and Champagne model.

$$(I) \quad \sigma^2_{disp} = \sigma^2_{obs} - \sigma^2_{inst} - \sigma^2_{term}$$

NGC 604 Ha

604R1_778-353356.dat

$$(II) \quad S(x,r) = \langle (\vec{v}(x+\vec{r}) - \vec{v}(x))^2 \rangle \qquad R(x,r) = \langle (\vec{v}(x+\vec{r})\vec{v}(x)) \rangle$$

S - NGC 604

R- NGC 604

NGC 604 - Halfa 6563

10 arcsec = 40.65 pc

NGC 604 - Halfa 6563
Mapa Bidimensional Velocidad Radial (km/s)

I hope the workshop get me started in the use of *Cloudy* with some dynamical approach. The future aim is to use the simulated spectra to obtain the same data as with observations with the posibility of a more controlled environment (# and coords. of the stars , Stellar wind on/off, LOS).