**First tentative results of the OTELO survey**

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**What is the OTELO survey?**

OTELO (Osiris Tunable Emission Line Object) is the emission-line object survey carried out with the red tunable filter of the instrument OSIRIS at the GTC, whose aim is to become the deepest emission-line object survey to date.

- Tunable filters: 2D, low resolution spectroscopy of all the objects in the field
- Very extensive field of view (8×8 arcmin)
- 10.4m diameter telescope
- Spectral range: 9070-9280Å (window in the airglow emission of the atmosphere)
- Tomographic sample every 6Å, with a FWHM of 12Å (36 frames)
- Spectral resolution to deblend H\(\alpha\) and [NII]
- ∼100 arcmin of sky coverage (Extended Groth Strip & Lockman Hole)

**Detection of the sources**

- For each frame of the tomography, a single scientific image with specific central wavelength is made (→ 36 images).
- A deep image is then obtained by averaging these 36 scientific images and their weight maps.
- The total efficiency of the system in each CCD is calculated by measuring the flux of the 2 reference F8V stars in each of the 36 scientific images.

Finally **SExtractor** in dual mode is used:

- The deep image is used for the detection of the sources
- The photometry is measured over the 36 single images.

**Observations & final reduction**

To this date, the observations of the first pointing, which started in 2010, have been completed (June 2014). More than 100 hours of observation with a mean seeing of 0.8 arcsec have been devoted to this task! The reduction of the images consisted in the following steps:

- Bias subtraction & trimming
- Removal of cosmic rays
- Flat-field correction
- Sky rings subtraction (!)
- Removal of fringing pattern
- A 4th order astrometry was then performed, with rms ∼ 30 milliarcsec.
- Finally: flux & wavelength calibrations using two F8V stars in the field

**Selection of emitting objects**

1) Detection of all the objects up to 3σ in the deep image: → 11237 objects
2) 1st selection of emitting candidates with automatic algorithm: → 6968 objects
3) Visual inspection of all the candidates with the help of thumbnails: → we are here!

At this point, we estimate that more than 10% of all the candidates are emitting objects!

Pseudo-spectra examples of some easily recognized emitting objects found in OTELO’s field. The thumbnails of one of the objects are also shown.