



R. THOMAS,

European Southern Observatory

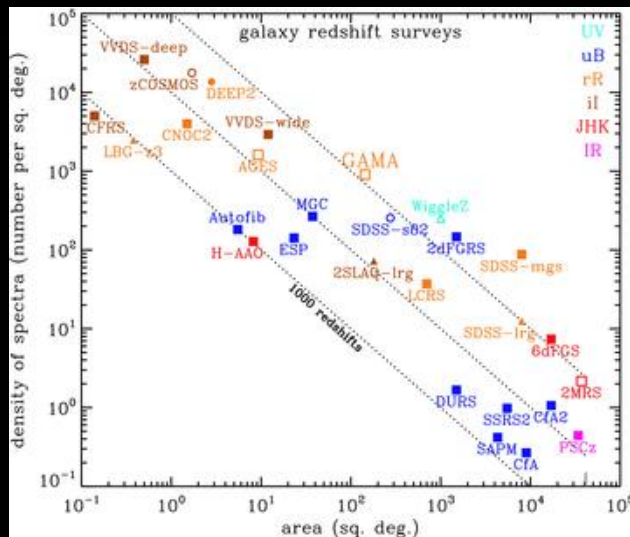
27th ADASS conference

Santiago de Chile



A D A S S
X X V I I

2000s → Development of Spectroscopic survey based on mainly on multi-wavelength photometry



ALL THESE SURVEYS HAVE
MULTI-WAVELENGTH PHOTOMETRY
AVAILABLE from UV/OPTICAL TO
INFRARED

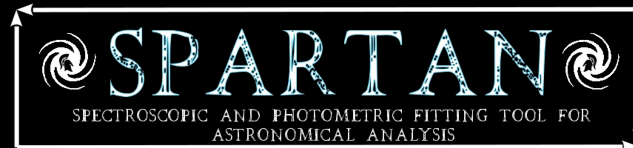
We have now galaxies observed with multiple
spectrographs (for small samples)

Ex: MASSIV + VVDS (SINFONI + VIMOS)
VVDS + 3DHST (VIMOS + HST)

We enter the era where multi-instrument photometry and spectroscopy is available

In the meantime galaxy fitting showed up with numerous softwares: LePhare, EAZY, HyperZ,
BEAGLE...

But no one combine in single fitting process spectroscopy + photometry

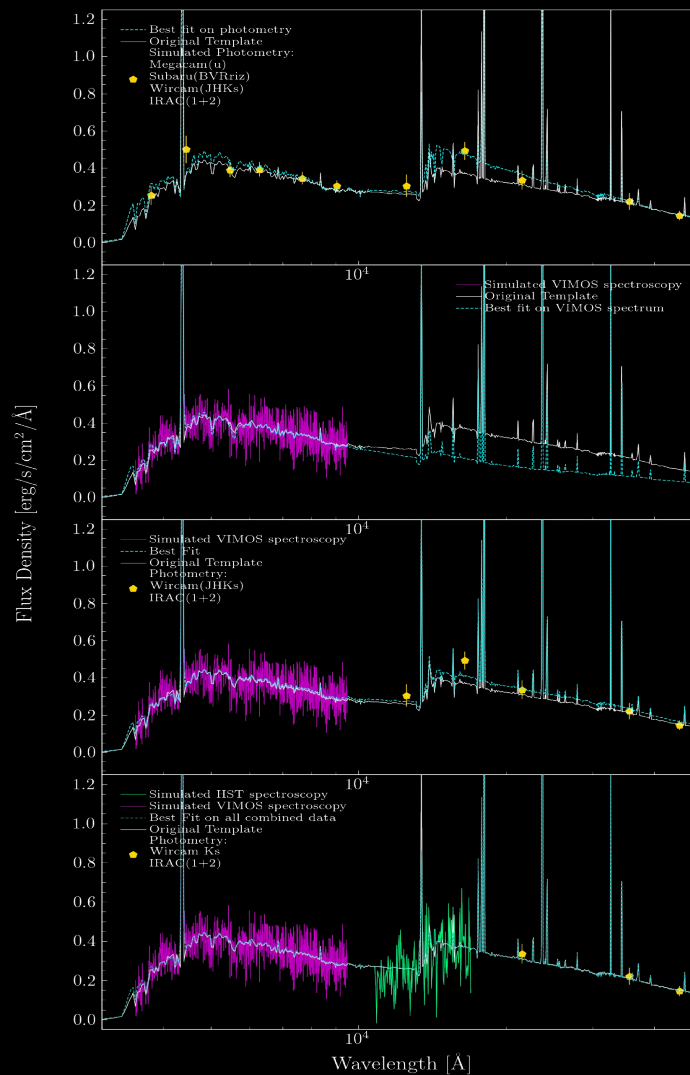


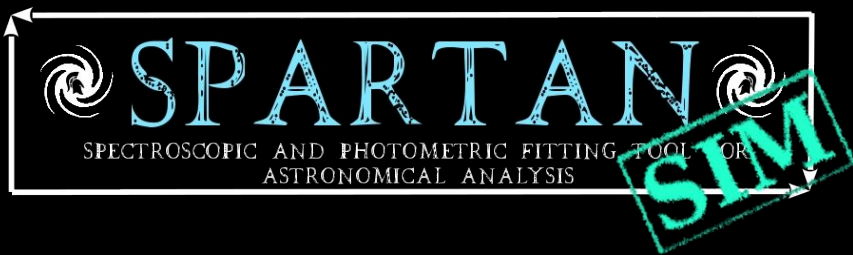


SPARTAN-FIT is the heart of the code.

It is able to take into account combinations of multi-instrument photometry and/or multi-instrument spectroscopy in a given fit

Comparison of the fit of the same object with different input data

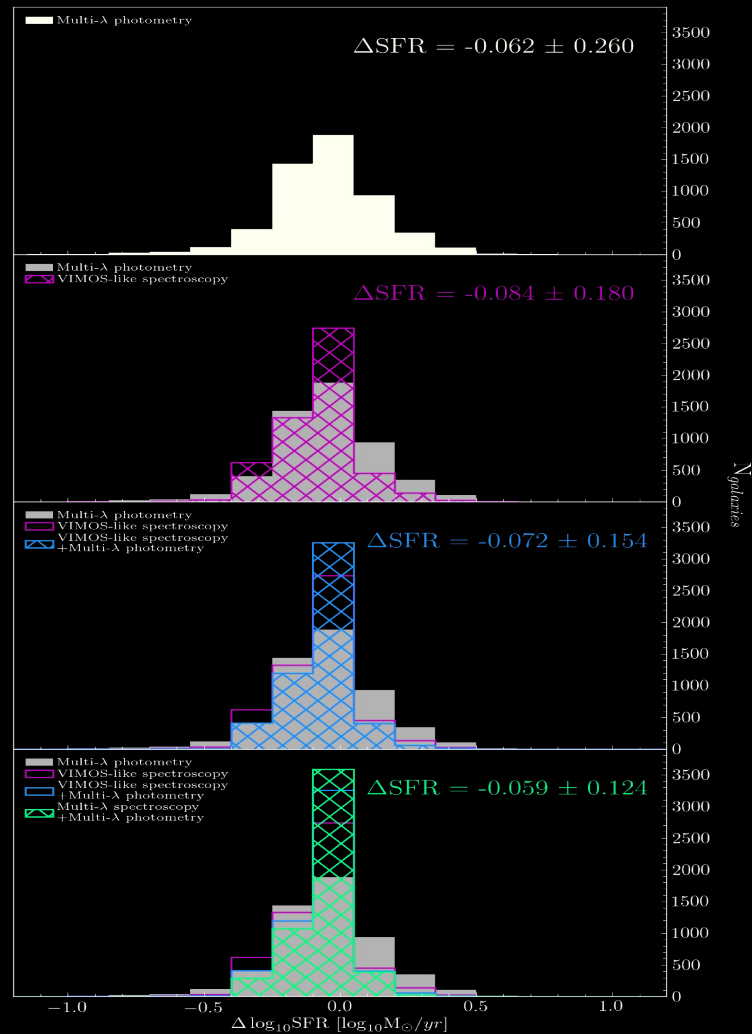




Constraints on parameters depend on the combination itself → SPARTAN-SIM allows one to study particular combinations of data and their influence in the fitting outputs.

It can simulate multi-instrument photometry and multi-instrument spectroscopy.

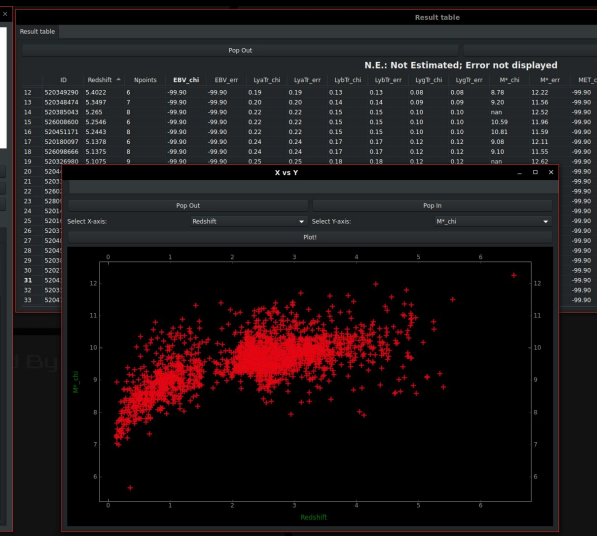
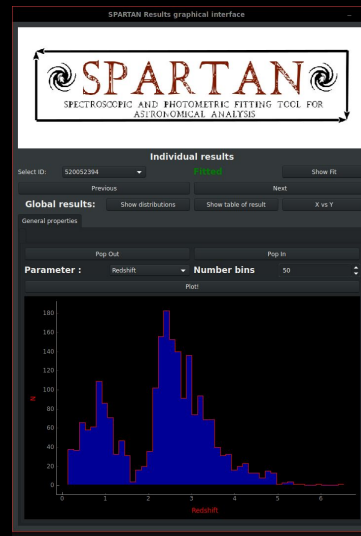
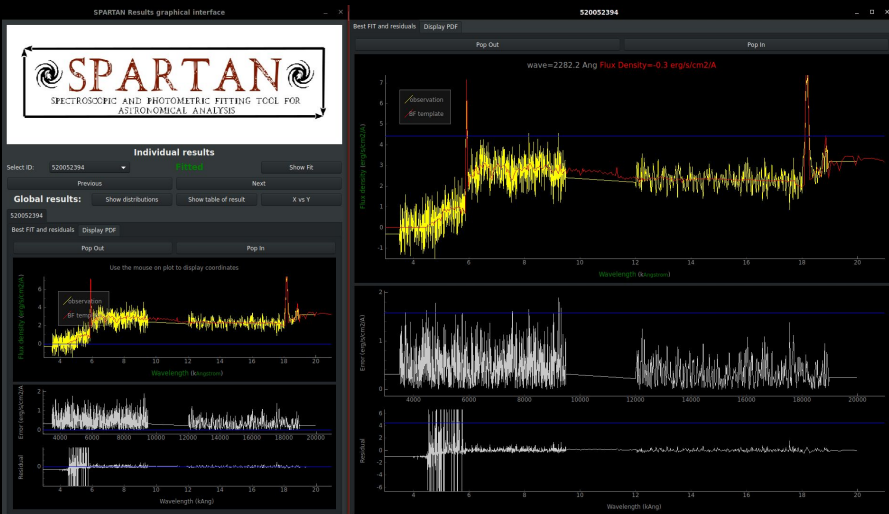
Comparison of Star Formation Rate estimation of simulated galaxies with different fitted data



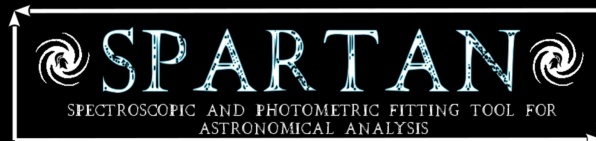


Three interfaces are included in SPARTAN:

- The CLI for general SPARTAN commands
- The TUI for the configuration of the fitting process
- The GUI for visualizing results of a fitting run.



Target Release date: Early 2018



AIM

The estimation of galaxy physical parameters is an important aspect of extragalactic astronomy and needed to study the evolution and formation of galaxies across cosmic ages. One of the main approaches to compare these parameters is the use of galaxy models to which we compare observations - this is the *galaxy template fitting*. Most galaxy template fitting software are using single type of observations (Photometry or Spectroscopy) while it becomes usual to have multiple observations for a given source (e.g. Spectroscopy + Photometry, Multiple spectroscopy). This will be even more common with the JWST and ELT observations. Using these different sources of information for a given source would therefore bring more observational constraints on the estimation of the physical parameters.



ADASS XXVIII

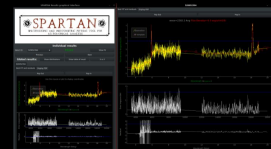
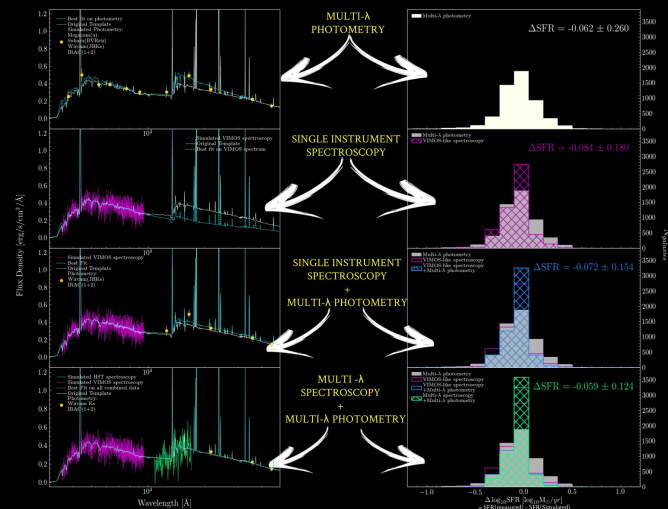
A Tool Designed by the community

The design of this tool was made by the community itself. A market study like survey was proposed in a panel of 45 extragalactic astronomers. This survey took with various aspect of the work (45 questions) among which the input data and their format, the fitting equations, the type of model to use, the user-machine interface could be found. The survey was answered by the majority and they also showed interest in the project. This ended to made by the community and therefore is as close as possible to the needs of the extragalactic astronomy community.

- Open Source software
- Python 3.5+
- For Linux and MacOS
- Will be available on pip

Make use of these libraries:

- Numpy
- Scipy
- fitsio
- Multiprocessing
- npyscreen
- PySide & pyqtgraph
-



SPARTAN comes with different user-machine interfaces to make its use an easier experience: A Text-based User Interface to check if your configuration of the code is correct. A Graphical Interface (see below) to view the results (both individual fits and global results)

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