

# SPARTAN

SPECTROSCOPIC AND PHOTOMETRIC FITTING TOOL FOR ASTRONOMICAL ANALYSIS

R. THOMAS -- Universidad de Valparaíso & European Southern Observatory (ESO, from 1st of July)

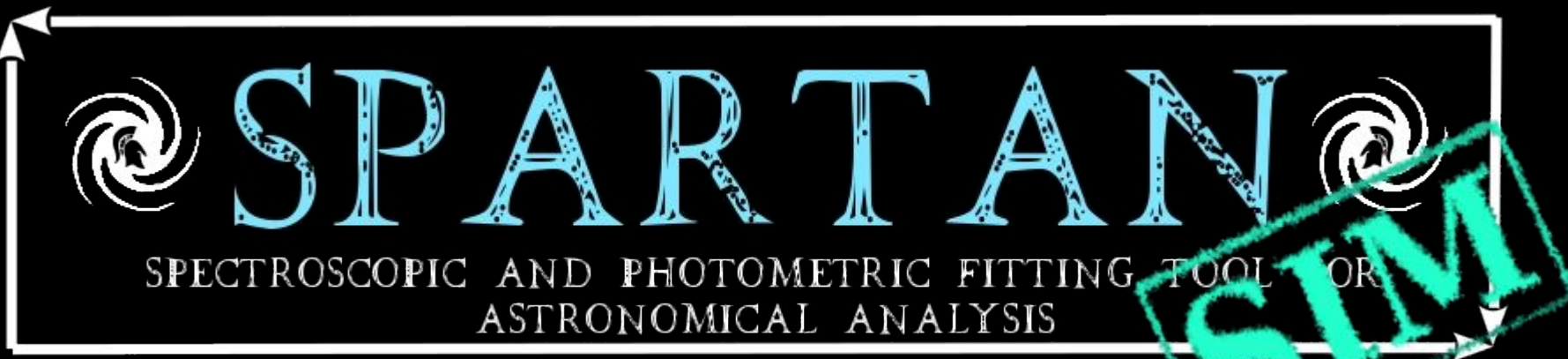
the.spartan.proj@gmail.com

## 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 compute these parameters is the use of galaxy model to which we compare observations - this is the galaxy template fitting. Most galaxy template fitting softwares 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 E-ELT** observatories. Using these different sources of information for a given source would therefore bring more observational constraints on the estimation of the physical parameters.

## A Tool Designed by the community

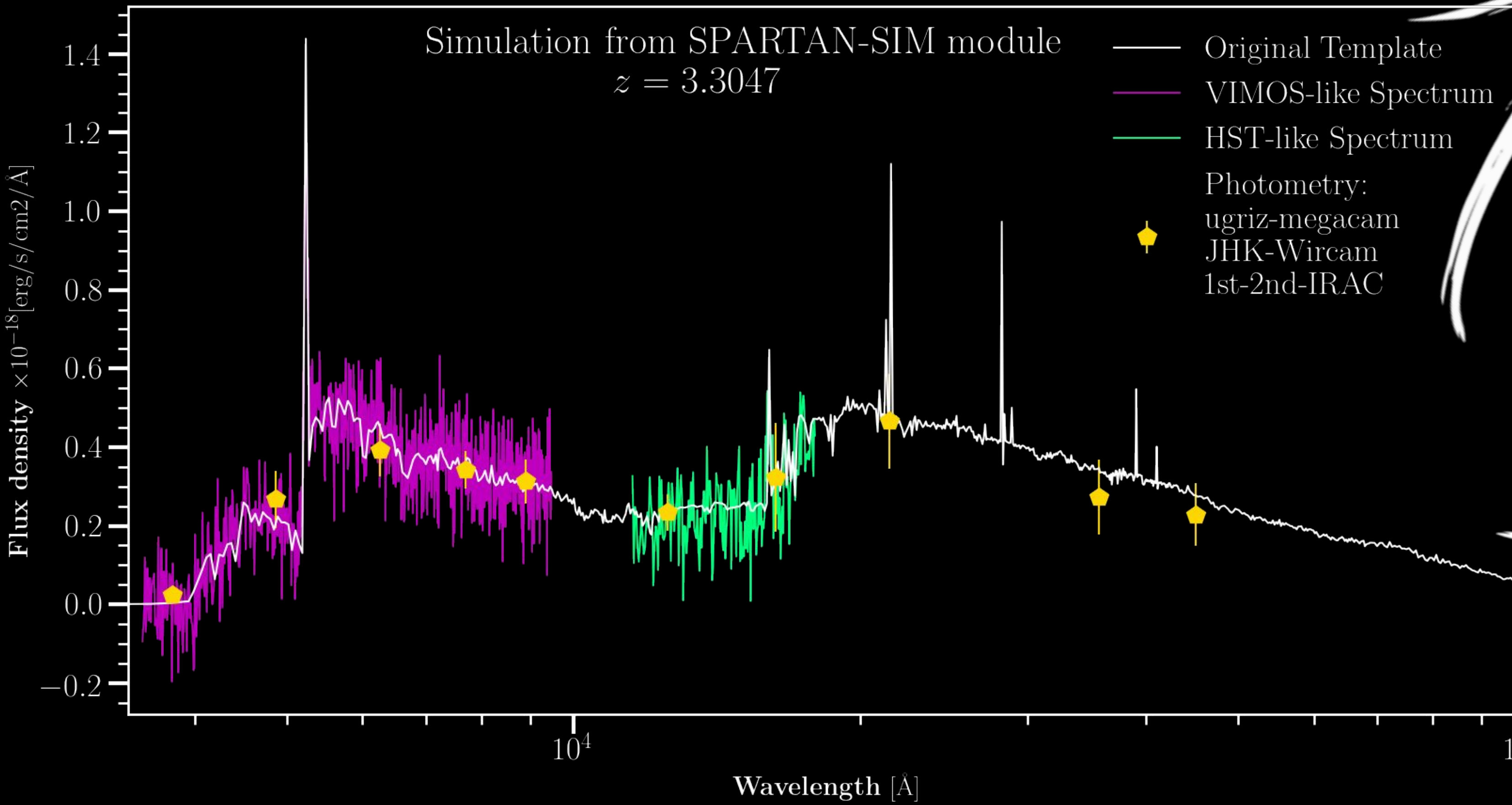
**The design of this tool was made by the community itself.** A market study-like survey was proposed to a panel of 45 extragalactic astronomers. This survey dealt with various aspect of the code (40 questions) among which, the input data and their format, the fitting algorithm, the type of model to be used, the user-machine interface could be found. The survey was answered by the majority and they also showed interest to the project. **This code is made by the community** and therefore is as close as possible to the needs of the extragalactic astronomy community, where the results of the survey and the final design of SPARTAN 1.0 can be seen. The documentation is also frequently updated and a tutorial will be written to help the users to use the program.



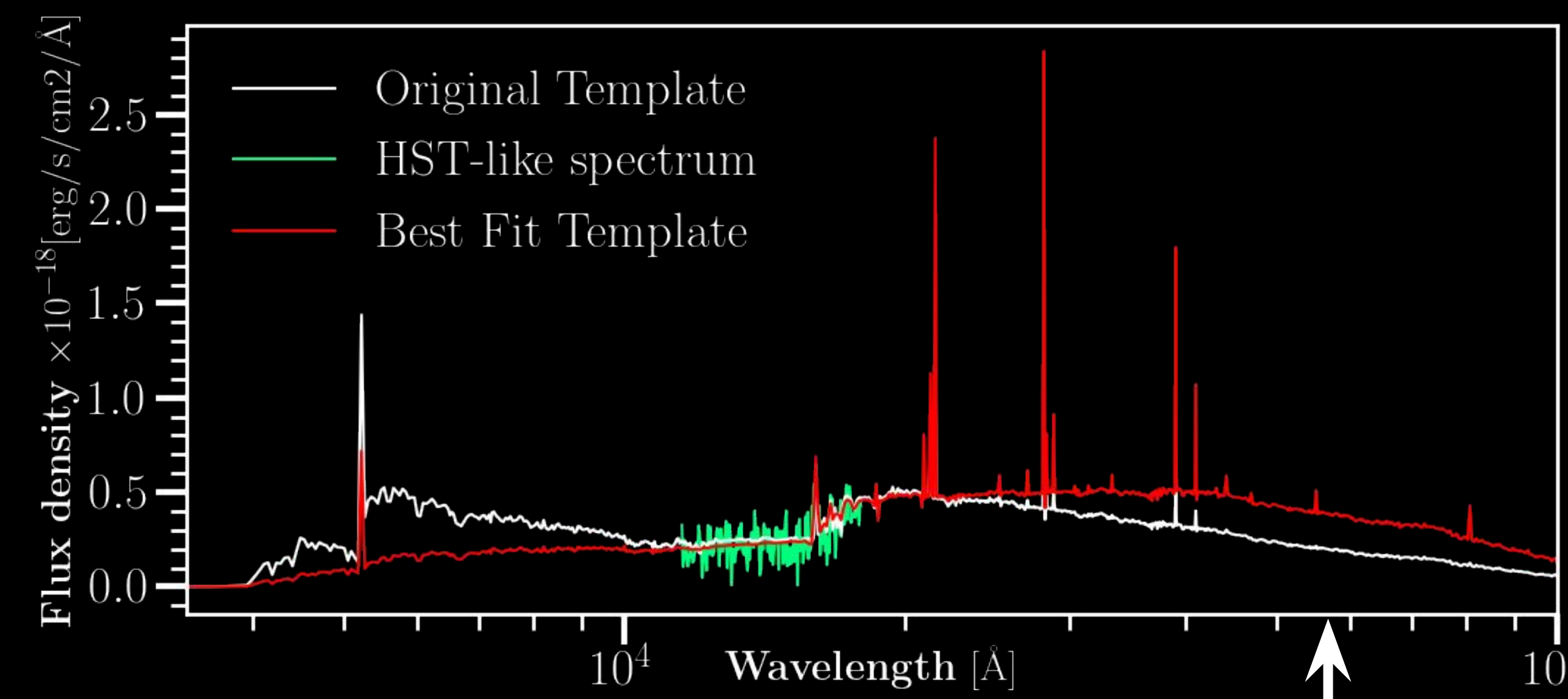
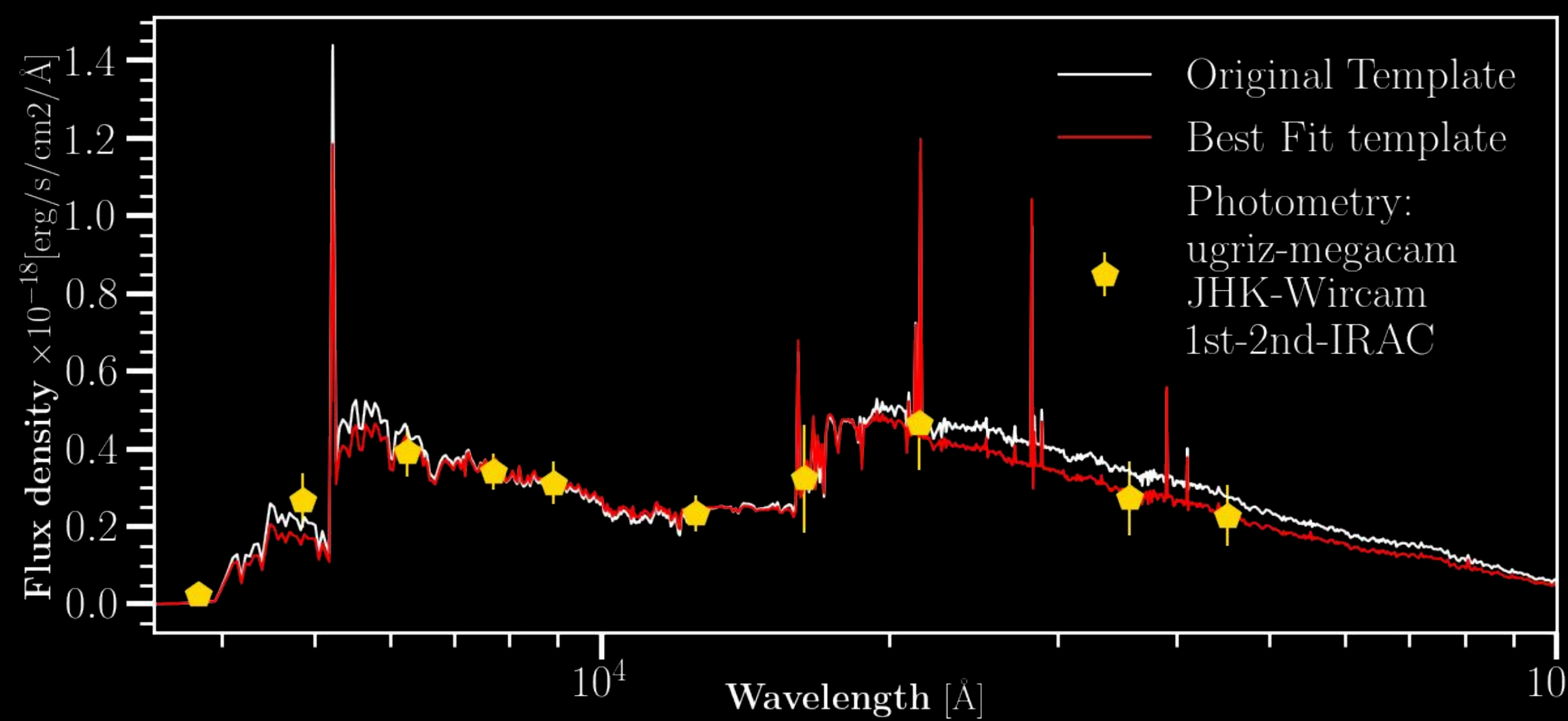
**SPARTAN output:** The code can create multi-wavelength photometry and/or (multi)-spectroscopy

**MAIN USER input:** distributions of redshift, observed magnitude in one band, SNR, bands list (~200 bands available), spectra type ( $\lambda$ -window + resolution), and a selection of models ingredients

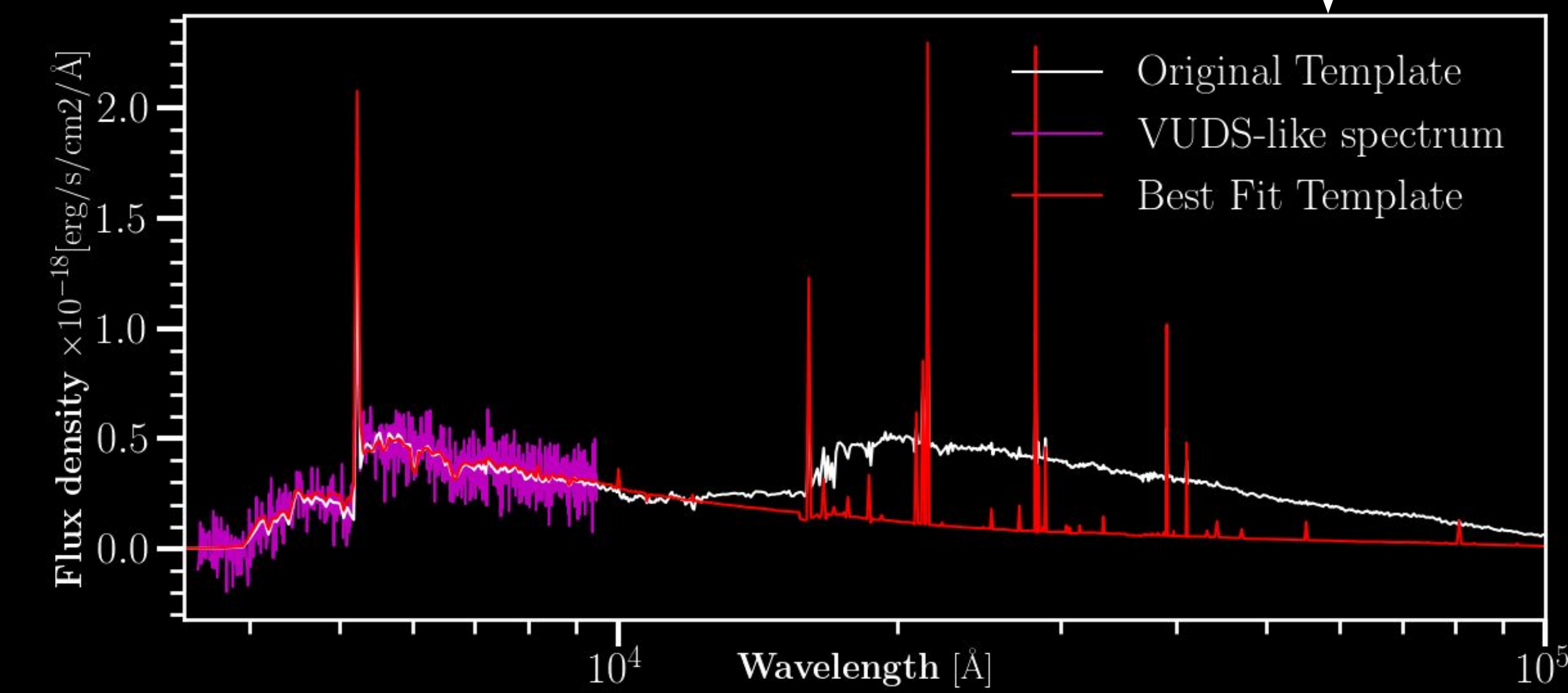
**INGREDIENTS:** SSP models, Free or fixed IGM, Dust Extinction, Simple and Multi-burst SFH, AGN, IR treatment, Emission Lines



## FIT ON MULTI- $\lambda$ PHOTOMETRY

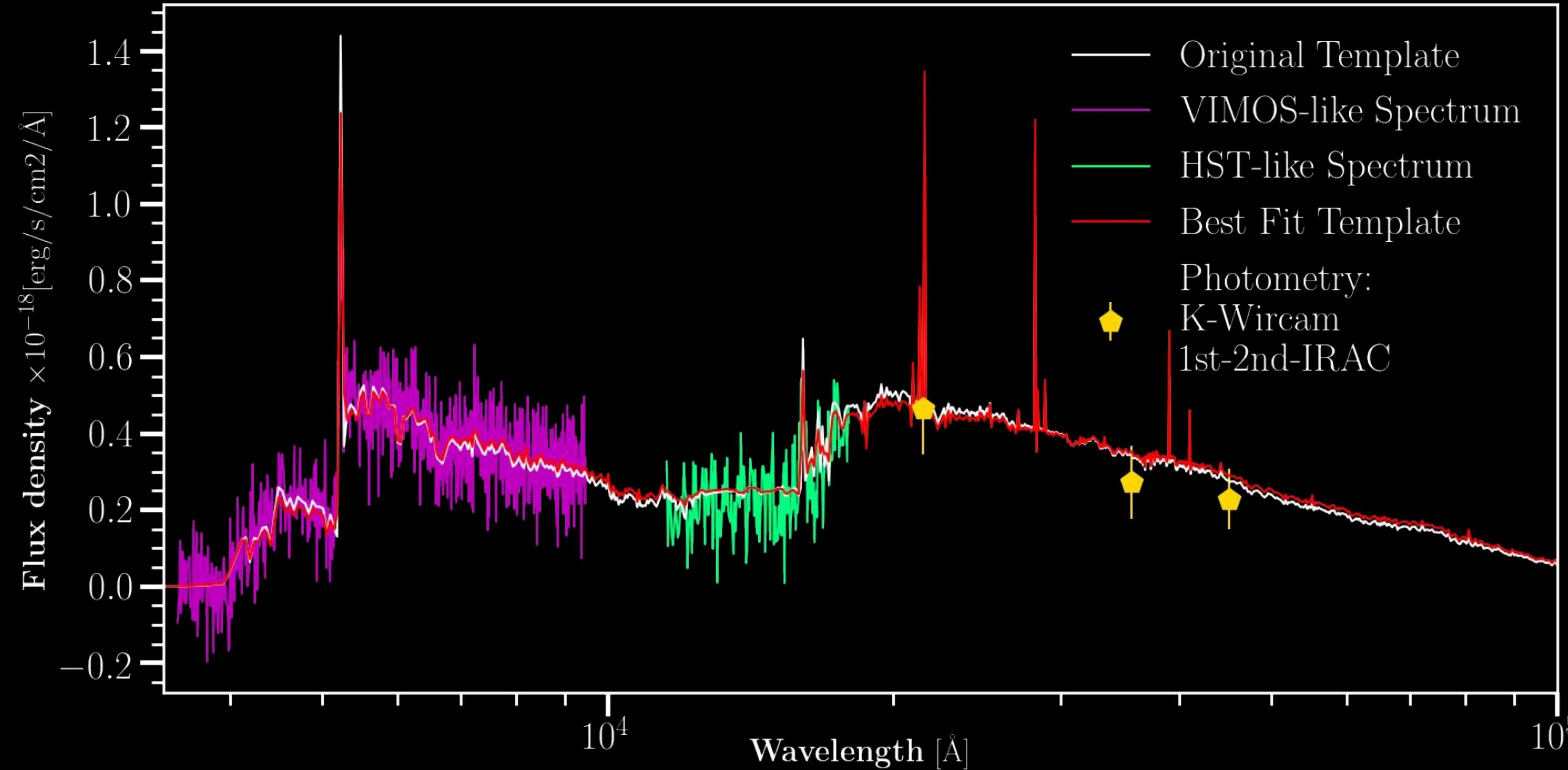
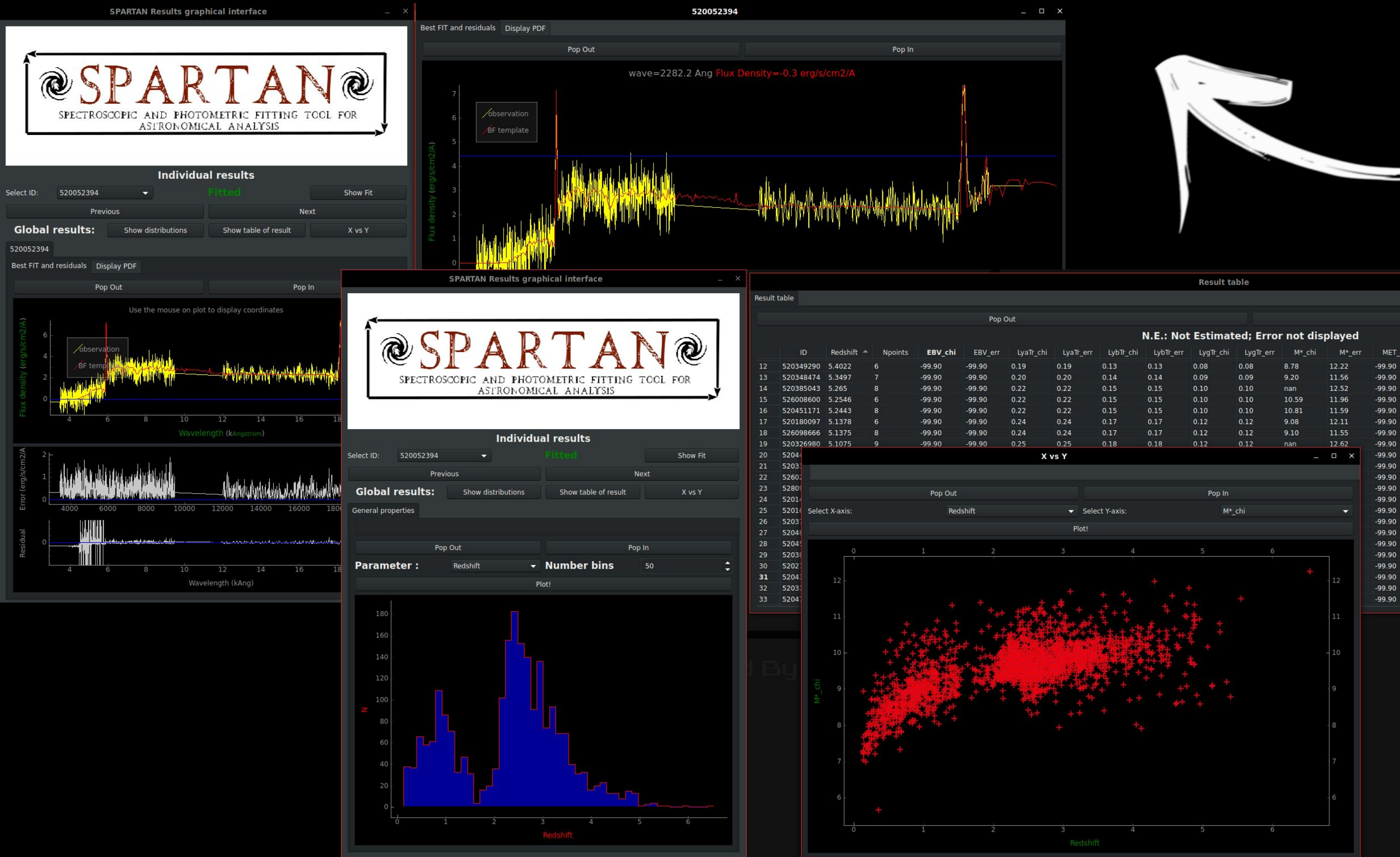


## FIT ON INDIVIDUAL SPECTROSCOPY



SPARTAN is able to gather any piece of photometry and spectroscopy that you can have for a given object and **join them in one single fit** and increase the constraints on the fit and parameters estimates

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 fit and statistical results)



## References

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Papers are in preparation to show the influence on the parameter estimations of multi-spectro-photometric template fitting and application to data!

Stay - tuned!



VISIT US!