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A graphical user interface for STECKMAP

P. Ocvirk[1]

[1]CEA Saclay, 91191 Gif sur Yvette, France
email: ocvirk@astro.u-strasbg.fr

Abstract. I present a report of the work in progress towards building a graphical user interface (GUI) for STECKMAP (STEllar Content and Kinematics via Maximum A Posteriori). It is the first serious attempt at making a GUI for a software for analysis of stellar content from integrated spectra of galaxies. It will allow a wider fraction of the community to use this sort of tools thanks to improved user-friendliness. As a result, better understanding of these methods and their strengths and flaws will be achieved by the community. This software also has a strong pedagogical potential. It will contribute to a higher awareness of the community concerning the challenges and the oppportunities in stellar populations modelling. The homepage of the project is http://www.astro.u-strasbg.fr/Obs/GALAXIES/stecmap_eng.html.

Keywords. methods: data analysis, techniques: spectroscopic, galaxies: stellar content, kinematics

Goal

In the last 5 years, a number of star formation history reconstruction methods have appeared, such as Reichardt *et al.* 2001, Cid-Fernandes *et al.* 2005, Ocvirk *et al.* 2006a. They represent large development investments and will therefore be picked up and reused by the community in the field of spectroscopic studies of galaxy formation and evolution and stellar populations synthesis. But eventhough there is a large pool of potential users, these codes are generally not very user-friendly. Also, since these methods are quite new, and interpretation of galaxy spectra is a difficult task, which yields largely debatable results, it is important to be able to use and compare several methods and models. Hence, easy and free access to stellar content analysis methods from optical spectra is vital today for the astronomical community. In order to improve the user-friendliness of STECKMAP, a GUI is being designed.

Presentation

The inversion methods of Ocvirk *et al.* 2006a, Ocvirk *et al.* 2006b are implemented in yorick†, and the GUI uses ActiveTcl‡ widgets. Figure 1 shows a screenshot of the GUI running. The SSP basis panel (upper right) allows one to set the various parameters required to build a basis of SSP, such as age range, wavelength range, resolution, sampling, and source. The data panel (upper left) offers basic functions such as loading spectroscopic data (i.e. the data to be fitted), collapsing in case of long-slit-spectroscopy data, and optionally providing parameters such as redshift average signal to noise ratio. Then the fitting engine panel (lower left) is used to choose the fitting options, such as with or without kinematics, stellar continuum handling (on-the-fly flux calibration or extinction law), and various hyper-parameters (smoothing lengths of the stellar age distribution,

† http://www.maumae.net/yorick
‡ http://www.activestate.com/Products/ActiveTcl

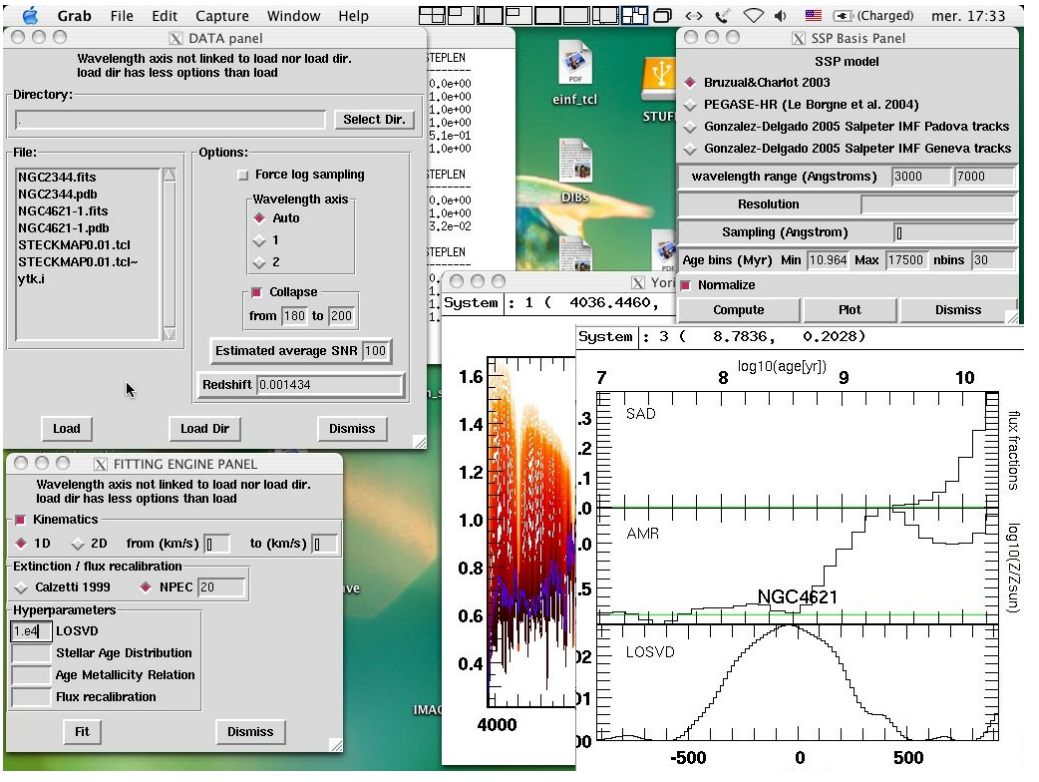

Figure 1. Screenshot showing the main panels of the GUI for STECKMAP.

age-metallicity relation and line-of-sight velocity distribution). The results of the analysis of the spectrum of the central part of NGC4621 appear in the lower right window. From top to bottom: stellar age distribution, age-metallicity relation (note that only the older ages of the relation are constrained for young populations do not show up in the spectrum), and line-of-sight velocity distribution. The software is already functional, though still requires some amount of development.

Further developments

Although the code is now functional, documentation needs to be written and a strategy for simple cross-platform installation must be devised.

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