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Stellar population analysis of galaxies in SDSS and LAMOST Pilot Survey

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Abstract. The Large Sky Area Multi-Object Fiber Spectroscopic Telescope (LAMOST, i.e. Guoshoujing Telescope) has finished its pilot survey (from October 2011 to June 2012). With about 3000 galaxy spectra collected during the pilot survey, we are planning to analyze the stellar populations of these galaxies in two different ways respectively. One is Lick indices (such as Hβ, Mgb, $\langle Fe\rangle$ etc., Worthey *et al.* 1994), which are not sensitive to the flux calibration, and another one is the full optical spectra fitting (Chen *et al.* 2009, 2010). Then we can evaluate the affects of flux calibration errors on stellar population analysis by comparing the results of the two methods′. Here we briefly show the early experiments aiming to test the consistency and/or difference between the two methods.

Keywords. galaxies: stellar content, galaxies: evolution, galaxies: formation

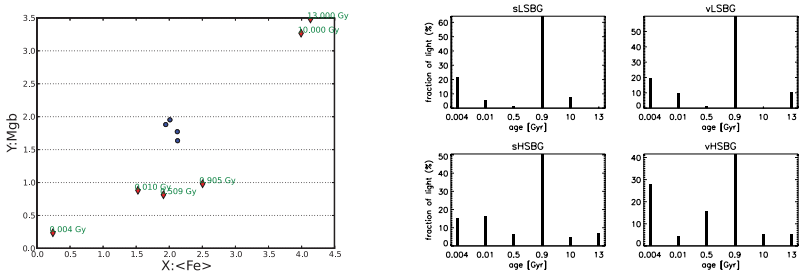

Figure 1. Stellar populations of 4 combined spectra from SDSS. *left:* Lick indices Mgb *vs.* $\langle Fe\rangle$ ($= 0.72 \times Fe\lambda5270 + 0.28 \times Fe\lambda5335$). Red diamonds are values of SSPs, and blue dots are values of 4 combined spectra. *right:* Light fractions of SSPs output from the spectral synthesis code STARLIGHT.

We selected a large sample of low surface brightness galaxies (LSBGs) from SDSS (Chen *et al.* 2012). Furthermore we divided it into 4 sub samples by central surface brightness of these galaxies, then combined all galaxies′ spectra in each bin into one **combined spectrum**. We studied the stellar populations of these 4 combined spectra in two ways, of which we adopted the same templates: 6 Simple Stellar Populations (SSPs) from BC03, IMF of Salpeter, stellar evolutionary track of Padova 1994, ages of 0.004. 0.01, 0.5, 0.9, 10, 13 Gyr and solar metallicity. From Fig.1 we can see that these two methods derived almost consistent dominant stellar populations.

References

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