

Flux Calibration for LAMOST Spectroscopic Survey of the Galactic Anti-center

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Abstract. Unknown extinction of Galactic disk stars makes it difficult to select flux standards based on colors alone for the LAMOST Spectroscopic Survey of the Galactic Anti-center (LSS-GAC; Liu *et al.*, this volume). To solve this problem, for each spectrograph of an LSS-GAC plate, 5 – 10 F-type stars are selected from spectroscopy-based stellar parameters (T_{eff} , $\log g$, [Fe/H]) and adopted as flux standards, and an iterative approach is adopted to calibrate spectra. From spectra processed with nominal response curves, stellar parameters are derived with the PKU stellar parameter pipeline, LSP3 (Liu *et al.*, this volume). More realistic response curves are then derived by comparing the observed spectra with synthetic spectra (Munari *et al.* 2005). The later is reddened assuming a $R = 3.1$ Fitzpatrick (1999) reddening law using $E_{(B-V)}$ obtained by comparing photometric and synthetic colors. New stellar parameters are derived from spectra reprocessed using the new response curves, iteratively. Comparison of LSS-GAC spectral colors with photometric ones yields differences on average 0.01 ± 0.06 and -0.06 ± 0.04 mag in $g-r$ and $r-i$, respectively. The relatively large difference in $r-i$ is caused by the fact that the current pipeline has opted to not to correct for the telluric absorption, most notably in the i -band. Comparison of multi-epoch LSS-GAC spectra indicates $< 8\%$ uncertainties in the spectral shape from 4000 to 9000 Å. The LSS-GAC seems to yields spectra of more realistic SEDs than the SDSS (DR7) at low Galactic latitudes (Fig. 1). The shape of LAMOST response curves may vary by up to 20% in a given night, and even larger for different nights, indicating that flux calibration plate by plate is essential.

Keywords. Galaxy: disk, techniques: spectroscopic, surveys

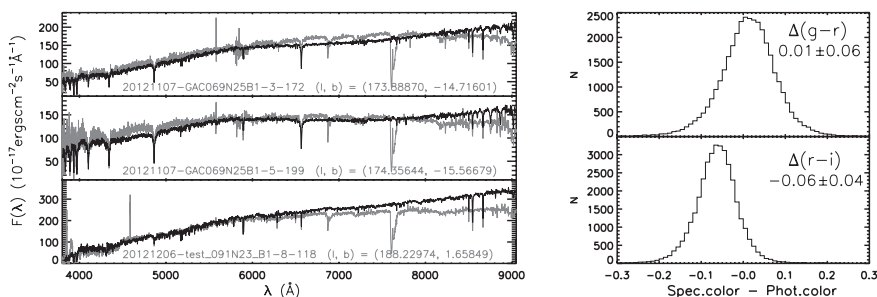


Figure 1. Left: Comparison of LSS-GAC (gray) and SDSS spectra (black). Right: Distribution of the difference of LSS-GAC spectral and photometric colors.

References

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