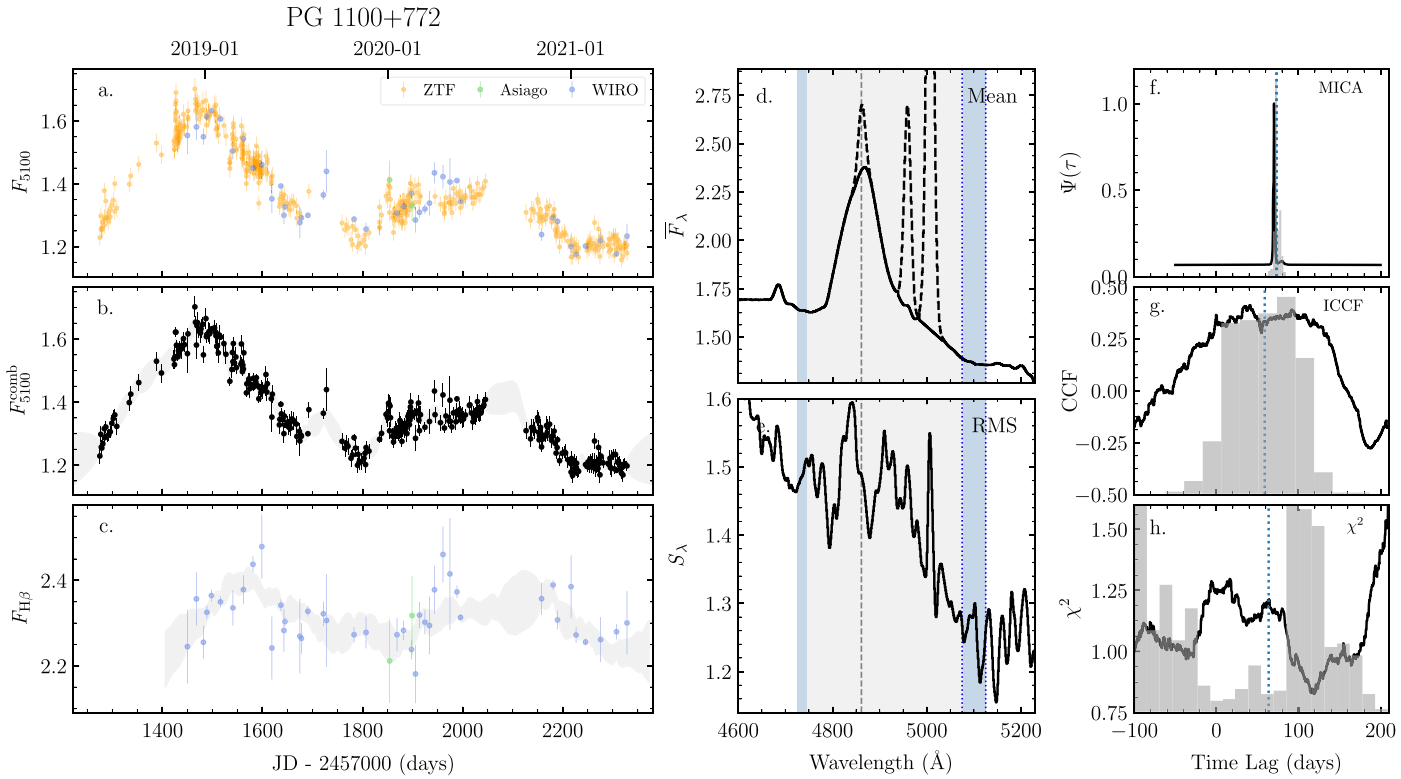

Figure 8. Time-series analysis of PG 1100+772. The meanings of the panels, lines, and histograms are the same as in Figure 2.

curves. This is very natural because the integrated emission-line fluxes in these broad bands are roughly smaller than 10% of the continuum fluxes and the emission-line variation amplitudes are generally smaller than those of the continuum (see Table 3).

The average fluxes and variability of the continuum and Hβ light curves are provided in Table 3. The variability and its uncertainty of a light curve have been defined (Rodríguez-Pascual et al. 1997; Edelson et al. 2002) as

$$F_{\rm var} = \frac{(\sigma^2 - \Delta^2)^{1/2}}{\langle F \rangle} \tag{4}$$

and

$$\sigma_{\rm Fvar} = \frac{1}{(2N)^{1/2} F_{\rm var}} \frac{\sigma^2}{\langle F \rangle^2}, \tag{5}$$

where σ is the mean square root of the variance, Δ^2 is the mean square value of the flux uncertainties, $\langle F \rangle$ is the average flux, and N is the number of epochs.

3.4. Line Width Measurements

The widths of the Hβ emission lines are measured from both the mean and rms spectra. Here, we use both FWHM and line dispersion $\sigma_{\rm H\beta}$ to quantify the line widths. For the rms spectra, the narrow emission lines (Hβ and [O III]$\lambda\lambda$ 4959,5007) are generally negligible. However, the Hβ and [O III] narrow emission lines in the mean spectra need to be removed before measuring the line widths of broad Hβ. The narrow Hβ lines were assumed to have the same profiles as the [O III] lines and were removed using the same local fitting method described in Paper I. The narrow-line subtracted spectra are shown in Figures 2–16.

However, the [O III]$\lambda\lambda$ 4959,5007 emission lines of PG 1202+281, PG1351+640, and PG 1351+695 are strongly blended with each other. In addition, PG 1001+054 and PG 1211+143 have strong Fe II emission lines. For these five objects, we make use of a more global fitting scheme to remove the contributions from the other emission lines (narrow Hβ, [O III], He II lines, and Fe II emission) before we measure the line widths of Hβ from the mean spectra. We adopted the software DASpec,[27] which is based on the Levenberg–Marquardt algorithm (Press et al. 1992), to perform the multicomponent fitting in a wide spectral range (4430–5550 Å). The fitting included (1) a power-law component for the continuum, (2) a template for Fe II emission (Boroson & Green 1992), (3) a simple stellar population template from Bruzual & Charlot (2003) for the contribution from host galaxy if necessary, (4) two Gaussians for broad Hβ, (5) one or two Gaussians for each of the narrow emission lines (e.g., Hβ and [O III]), and (6) one or two Gaussian for the He IIλ4686 line. The narrow lines were assumed to have the same profiles. The narrow Hβ lines in PG 1001+054 and PG 1211+143 are too weak to be decomposed from the broad Hβ. In their fitting, we fixed the flux of narrow Hβ to be 0.1 of their [O III]λ5007 lines.

We measured the line widths of the broad Hβ line in the mean spectra after removing the contributions of the other components (see Table 6). The cleaned mean spectra are shown in Figures 2–16. The uncertainties were estimated using the bootstrap method. A subset of N points were randomly extracted (with replacement) from the original N data points from the mean or rms spectrum. We repeated this procedure 500 times and measured the FWHM and $\sigma_{\rm H\beta}$ from the resampled spectra. The uncertainties were measured from the

[27] DASpec is available at https://github.com/PuDu-Astro/DASpec.

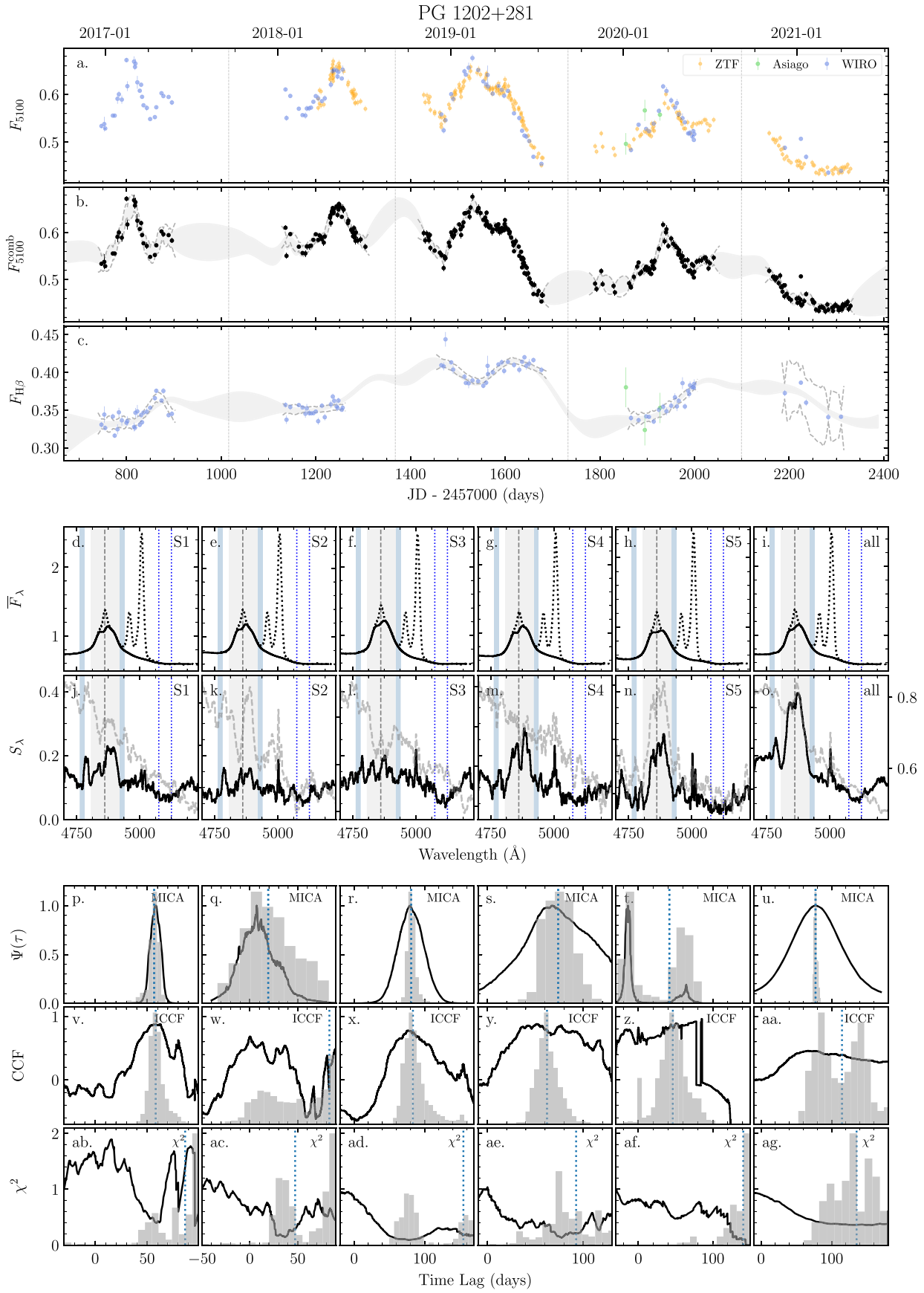

Figure 9. Time-series analysis of PG 1202+281. The meanings of the panels, lines, and histograms are the same as in Figure 2. In the narrow-line-correct mean spectra in panels (d)–(i).

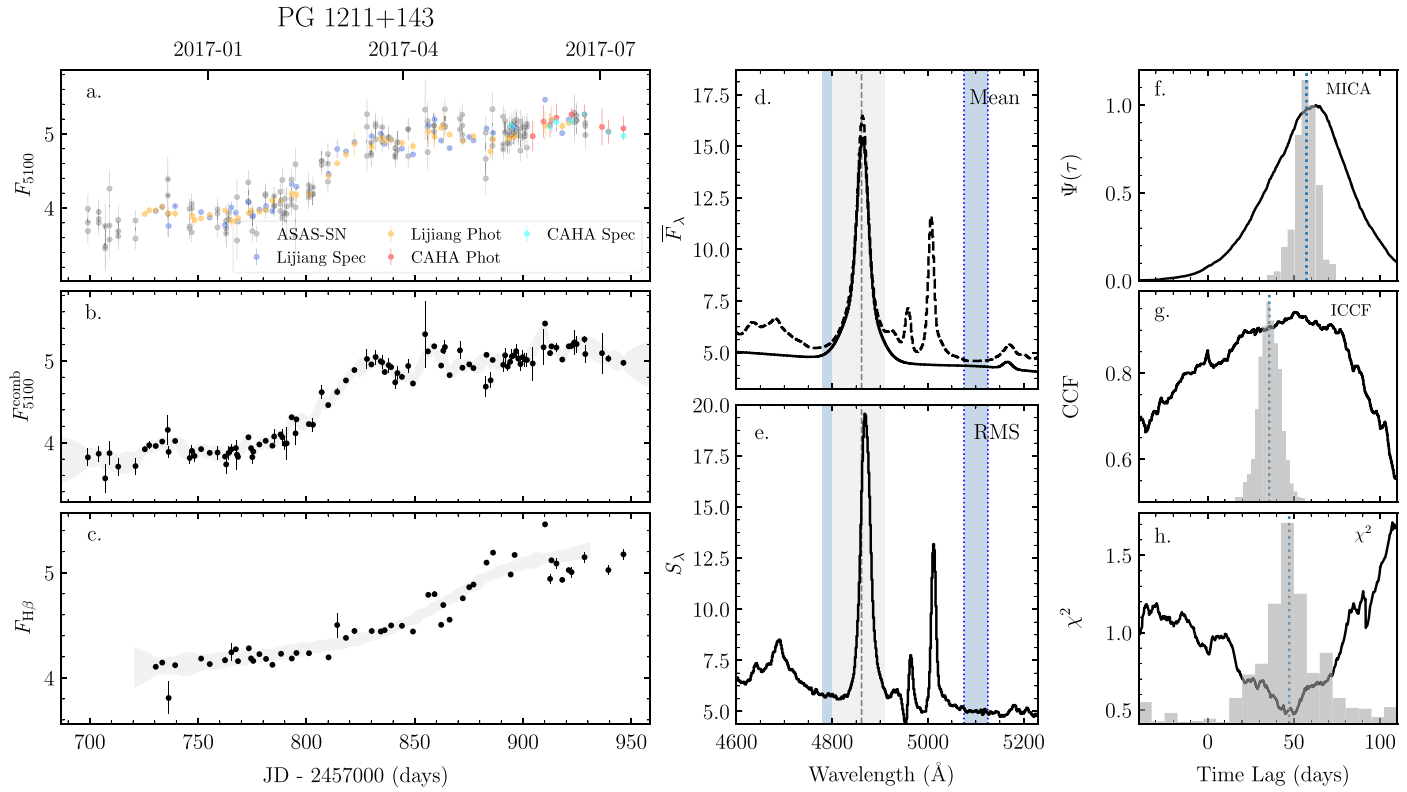

Figure 10. Time-series analysis of PG 1211+143. The black dotted and solid lines in panel (d) are the original and cleaned (e.g., Fe II, He II, narrow Hβ, and [O III]$\lambda\lambda$ 4959,5007) mean spectra. The meanings of the other panels, lines, and histograms are the same as in Figure 2. Panel (c) is the combined Hβ light curve from Lijiang and CAHA.

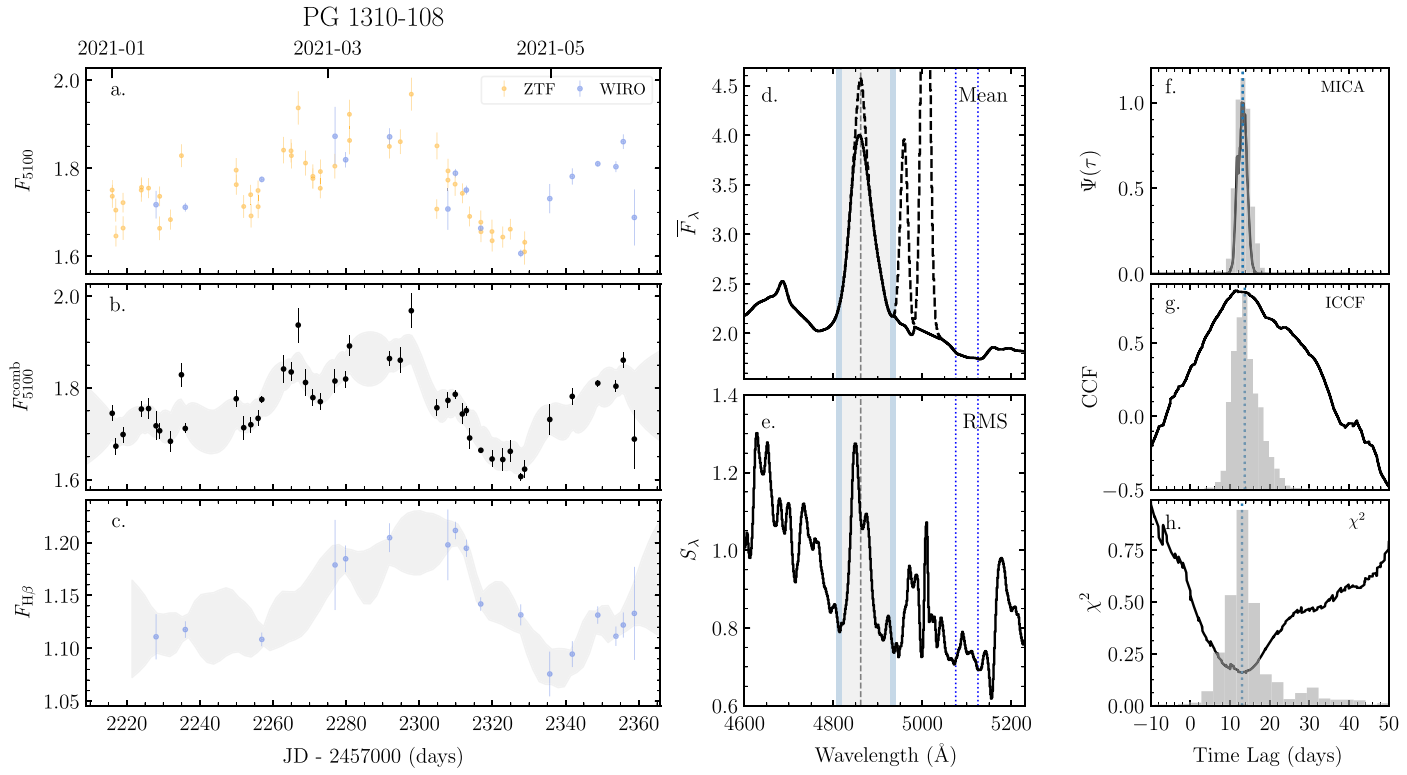

Figure 11. Time-series analysis of PG 1310−108. The meanings of the panels, lines, and histograms are the same as in Figure 2.

generated distributions. For PG 1001+054 and PG 1211+143, we estimated the uncertainties by assuming the flux ratio of narrow Hβ/[O III]λ5007 to be 0.0 and 0.2 (as aforementioned, the cases with Hβ/[O III] = 0.1 is assumed as the central value). This allowed us to take into account the uncertainties of narrow Hβ decomposition (see more details in Du et al. 2014).