

### Figure 12–3

This figure contains 25 spectral comparison plots for the 23 BALQSOs with more than one epoch of data. (0019+0107 and 0842+3431 have two comparison plots each.) For objects with more than two epochs, pairs were selected based on wavelength coverage, S/N, resolution, and time variability of the BALs and BELs.

In each graph, the coordinate name of the object is shown at the top and the decimal year of the two epochs is shown at the top right. The earlier epoch is shown as a thick line, and the later as a thin line. The vertical axis is relative flux with units of  $\text{ergs s}^{-1} \text{ cm}^{-2} \text{ \AA}^{-1}$ , the horizontal axis is in Angstroms in the QSO rest frame. Brackets are shown above each of the strongest BALs. These brackets were chosen at arbitrary positions based on the C IV trough, and then the predicted positions of the same BALs of other lines are shown. The brackets are meant to provide reference points, and are not intended to indicate the entire extent of broad absorption.

Only the high resolution ( $\sim 180 \text{ km s}^{-1}$ ) spectra were used for the comparisons whenever possible. Otherwise, spectra were used that were the average of any and all high, moderate ( $\sim 420 \text{ km s}^{-1}$ ), or low ( $\sim 720 \text{ km s}^{-1}$ ) resolution spectra available for each epoch. The high resolution spectra were rebinned to  $2.4/(1+z_e) \text{ \AA}$  per bin, or  $\sim 120 \text{ km s}^{-1}$  per bin, to improve the S/N per bin. The low-resolution averaged spectra have bin widths of  $4.0/(1+z_e) \text{ \AA}$ . At the top of the graphs, ranges indicate the range where only high resolution data was used (with an “H”), and where low-resolution averaged data was used (with an “L”).

At the bottom of each graph is a lower plot which is the difference between earlier and later epochs, *i.e.* the thick line minus thin line. The units on the lower plot are the same as the upper plot. The error in the difference spectra is shown at the bottom of the lower plot. The units and scale on the error spectra are the same as the difference spectra, except that it is shifted such the zero point is the lower boundary line of the graph.

The difference in  $R_s$  band magnitudes between the two epochs is shown at the top of each plot, in the sense of the later magnitude minus the earlier. A negative value implies an increase in continuum brightness from the first to the second epoch. Note that the error is  $\sim 0.02$  magnitudes, so a change of less than 0.08 magnitudes may not be significant. The maximum deviation in  $R_s$  is also shown. This is the same as column 8 in table 8–1.