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I thought it wise to give everyone a quick explanation of the methods I have used to obtain the equivalent width values I am going to be including in my paper, so that the results will be reproducible by all. This is especially important since some of my results have differed from those produced by Gaston in his papers on equivalent width measurements in both low-z and high-z supernovae.

Due to the high level of noise in my spectra, I found it difficult if not impossible to identify the endpoints of the spectral lines by visual inspection alone; therefore, I have used two different methods to determine the endpoints. The first is a multi-stage process, outlined below (this summary was prepared to be used for my paper and/or thesis, and is probably a bit more detailed and explanatory than is necessary for the group, so forgive the repetition of information with which I am sure all of you are already familiar):

1. Run the spectrum through the superfit program with rebinning set at 5 angstroms (for low-z spectra with artificially-added noise, run unweighted with z, min/max Av, and galaxy template scaling all set to 0). Superfit will interpolate over the entire spectrum using the IDL "interpol" routine and rebin, using the interpolated values for the middle wavelength of each 5-angstrom bin.
2. To determine endpoints of spectral lines, smooth spectrum with a large box size (21-29, usually 25). This is necessary because a large amount of noise makes the endpoints of the lines in the raw spectra difficult to determine, and this level of smoothing reduces the noise while retaining the basic shape of the spectrum, making the lines more clearly delineated.
3. Determine endpoints for equivalent width measurements, noting both wavelength and flux values; this involves several different considerations. In the original equivalent width paper, the endpoints were determined as the two maxima points through which a line could be drawn without intersecting the spectrum. While this produces consistent results in low-noise spectra, the addition of noise can often produce an intersection point within what is obviously a single absorption line. In this case, it is necessary to be familiar with the basic shape of the spectrum, known from low-z cases, to determine when a peak is genuine and when it is due to noise. This can be tricky because the endpoints are not very precisely defined even in low-z spectra, but are found within a range of wavelengths, and a low signal-to-noise can make some of the smaller features nearly invisible. Also, noise can raise the level of some peaks compared to others, and using the "two maxima" method can therefore combine multiple lines into one. Very high noise levels in the unsmoothed spectrum can cause additional problems, since it in effect "flattens out" the spectrum, and what once were clear peaks become plateaus, making determining a precise endpoint problematic, since there is no longer a sharp point. Despite these effects, a little familiarity with the standard spectra is usually all that is necessary to make a clear distinction between features.

4. After determining endpoints, return to the unsmoothed spectrum. Locate the exact position of the endpoints determined in step 3 as precisely as possible, at both the wavelength and flux values, and measure the equivalent width of the line through these two points (in the iraf 'splot' task, this is accomplished by marking each endpoint with 'e').

The results obtained from this method with my supernovae are given in Figs. 1 and 2, and compared with Gaston's results from his supernovae (the diamonds represent Gaston's data, the triangles my own measurements).

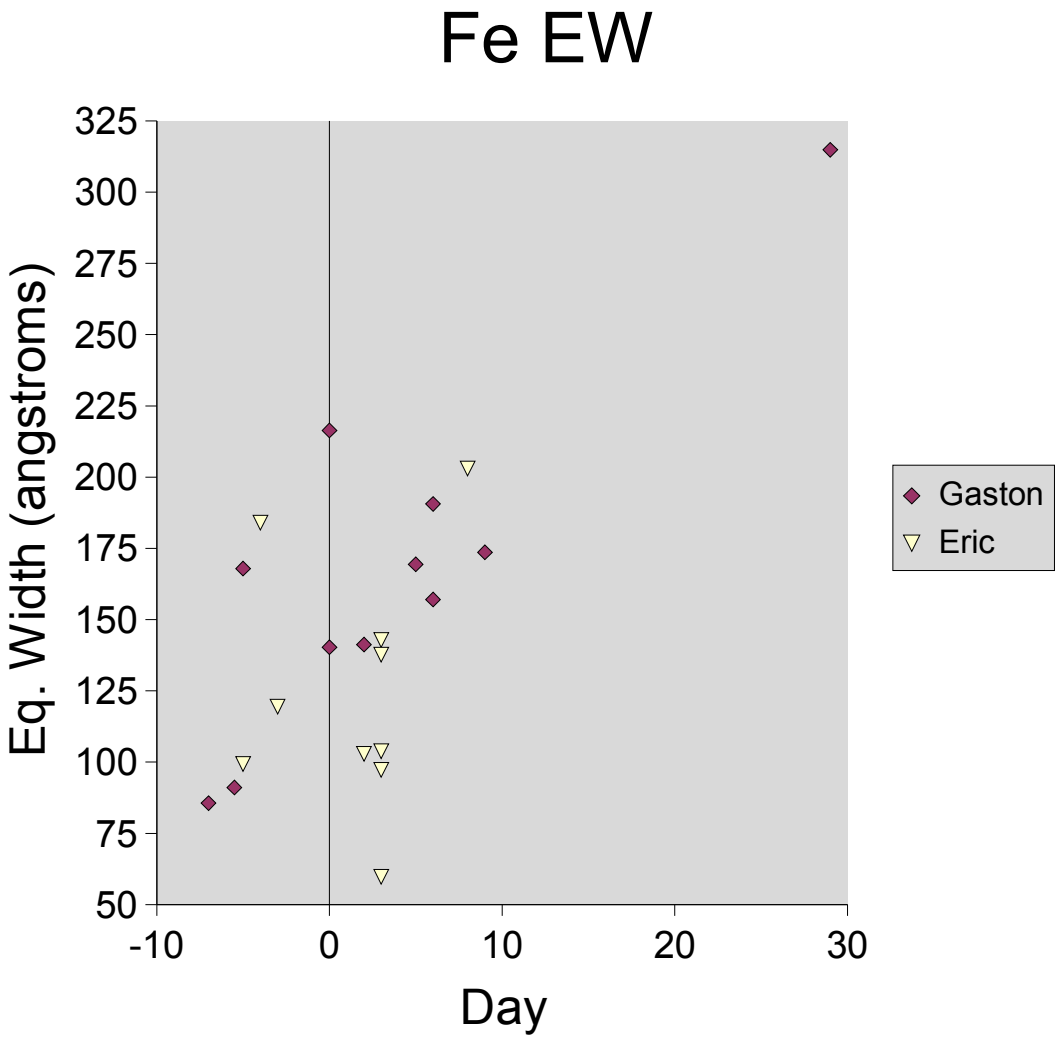

Fig. 1: My measurements of the equivalent width of the Fe II line in the Keck Dec. 1997 and March 1998 supernovae and the ESO March 1998 supernovae data, using the aforementioned method, compared with Gaston's measurements of the same line in his high-z supernovae, obtained using visual inspection.

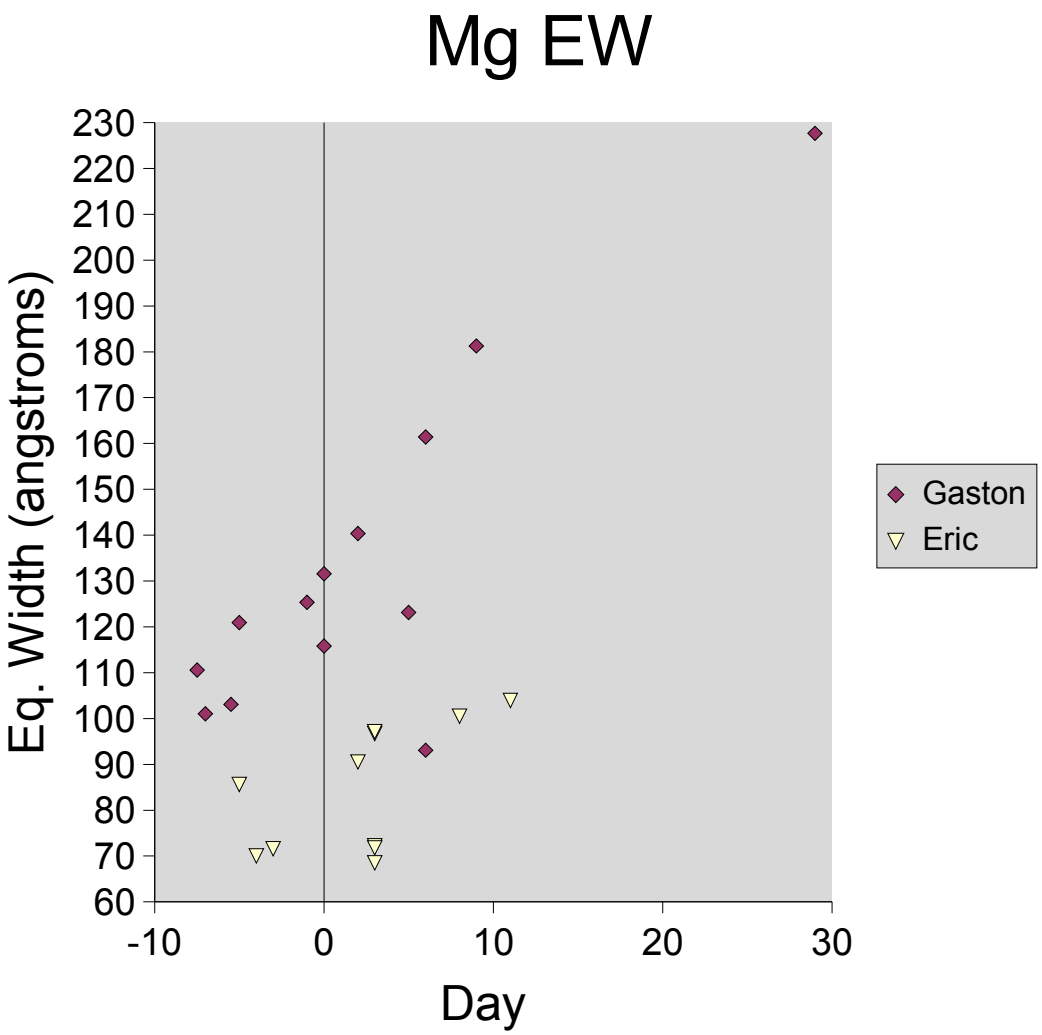

Fig. 2: My measurements of the equivalent width of the Mg II line in the Keck Dec. 1997 and March 1998 supernovae and the ESO March 1998 supernovae data, using the aforementioned method, compared with Gaston's measurements of the same line in his high-z supernovae, obtained using visual inspection.

As you can see, most obviously in the Mg graph, there is a systematic difference, in that my values come out, on the average, lower than Gaston's (who used only a visual inspection to determine his lines, on both low-z and high-z spectra). Reading the high-z paper, I couldn't find any mention of how the lines were measured, but since the spectra were all presented binned at what I assumed was 20 angstroms (since that is the default for Andy's superfit program), I decided that I would try the same thing. I rebinned my

spectra at 20 angstroms, using an IDL program I wrote myself, and remeasured the lines. The results are given in Figs 3 and 4:

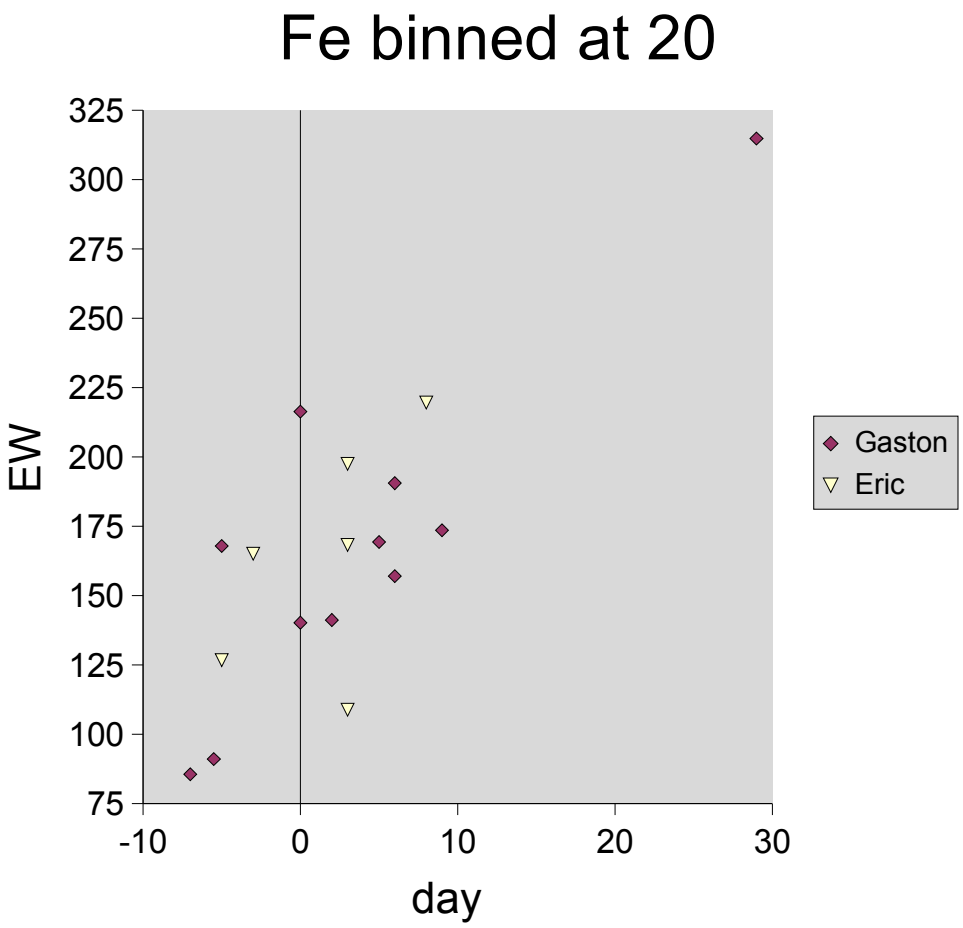

Fig. 3: My measurements of the equivalent width of the Fe II line in the Keck Dec. 1997 and March 1998 supernovae and the ESO March 1998 supernovae data, using the 20-angstrom binning method, compared with Gaston's measurements of the same line in his high-z supernovae, obtained using visual inspection.

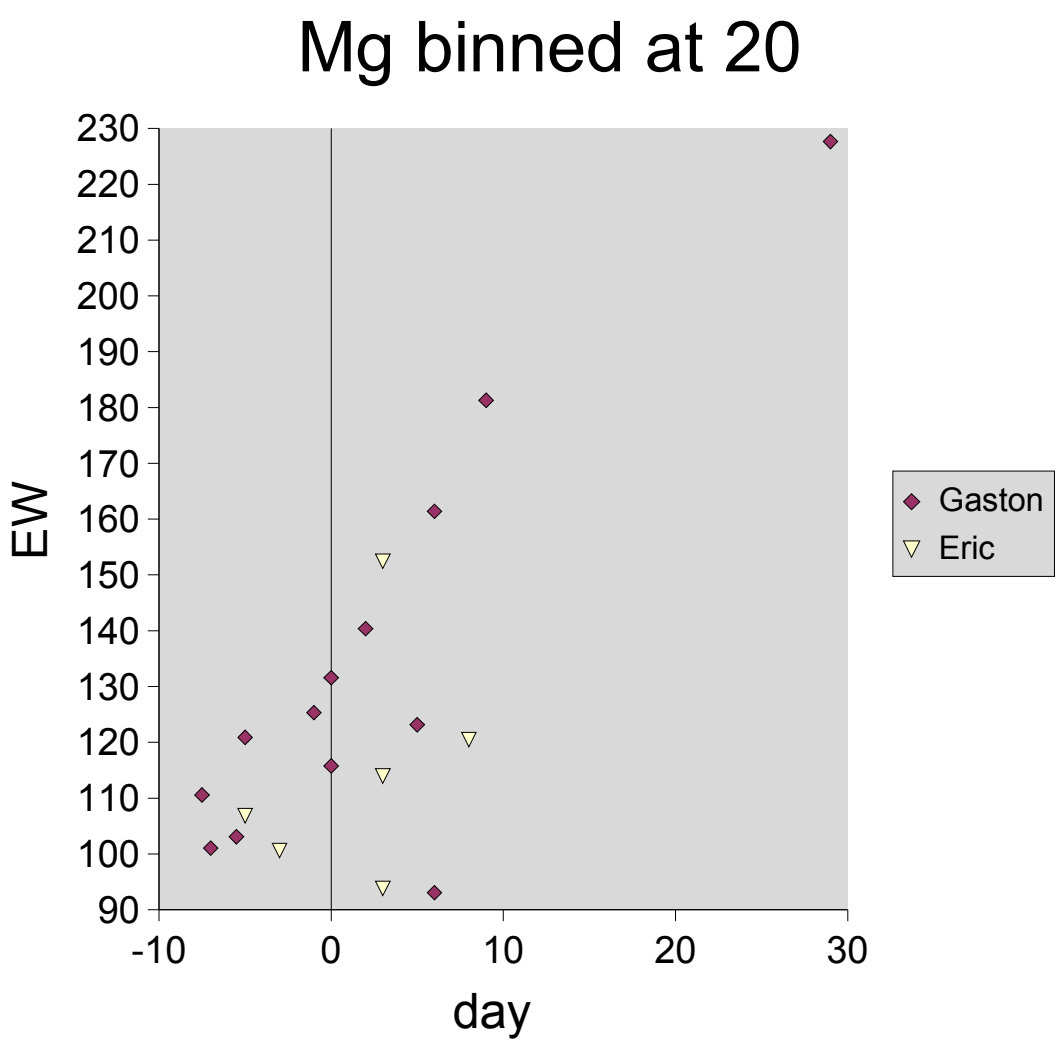

Fig. 4: My measurements of the equivalent width of the Mg II line in the Keck Dec. 1997 and March 1998 supernovae and the ESO March 1998 supernovae data, using the 20-angstrom binning method, compared with Gaston's measurements of the same line in his high-z supernovae, obtained using visual inspection.

This time, my results compared much better with Gaston's. This is somewhat peculiar, since of the two methods I used, the first one could be considered to be closer to Gaston's own method, and so might be considered likely to yield the more similar result. Most likely, my method and Gaston's are leading us to choose different endpoints, which would result in different width measurements.

This leaves the question of which method actually compares best with the real value of the widths. To answer this question, I have been adding Gaussian noise to a low-z spectrum, with known line widths, and measuring the width of the lines using both

of my methods. I have not yet completely finished the analysis, but preliminary results indicate that the 20-ang. binning produces more accurate results for lower levels of noise, but becomes more unreliable at high noise levels, since at such levels the endpoints become much more difficult to find using the binning method. This is not certain, however, and I still have some study to do on the question before I am ready to to say anything definitively.