

M. DiSanti's comments for 10 July 2015 review of the gbo-kpno dataset on high-resolution spectra of C/1996 B2 (Hyakutake), for PDS/SBN

1. Flux versus flux density. Units in Tables offset_(0,2,7,10)_arc-sec.tab: Field 2 is labeled "flux" but since units are (erg/s/cm²/Å), better would be "flux density," or F_lambda. This change should be made in collection_description.txt (under "Parameters") and also in .xlm files describing the tables. The flux contained in emission lines (erg/s/cm²) is then given by the sum of F_lambda over the spectral extent of the line (following continuum subtraction, which was done as explained under "Processing"), multiplied by the single-channel dispersion (Delta_lambda). For example Delta_lambda ~ 0.068 Å in the region of the CN band complex spanning 3850 – 3890 Å (as shown beautifully on p. 9 of pox1.pdf).

What is the aperture over which flux (density) was measured? Slit dimensions were 0.87x7.4arc-sec. Is the spatial window ±3.7arc-sec centered at the 0,2,7,10arc-sec offset positions? Please specify, e.g., under "Data" in "collection_description.txt." Such information is necessary for computing the mean column density of emitting species, for example.

2. Time stamp of observations. A related issue is that the starting and stopping times are the same for all offset spectra – as stated in offset_(0,2,7,10)_arcsec.xml files:

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start_date_time = 1996-03-26T05:57:57Z
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stop_date_time = 1996-03-26T11:19:23Z. (presumably these are UT?)
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With the limited slit dimensions (7.4arc-sec length), these observations must have been separate exposures, or at least the (0,2)-offset spectra must have been obtained separately from the (7,10)-offset spectra, unless the spectrograph has an "integral field" capability, but this does not appear to be the case. Better would be to list start, stop UT for each set of offset position observations and list these in the corresponding "offset_#_arcsec.xml" file, or state explicitly if they were obtained simultaneously.

3. Description of plots. Add clarifying text in collection_description.txt (under "Ancillary Data"). After "60x," a description of spectra shown in pox(0-3).pdf is needed. For example, "Two traces are shown in each panel: the one in orange is a spectral extract centered on the nucleus (i.e., a nucleus-centered extract), the one in green is arbitrarily offset vertically and in wavelength (by 1 Å), and represents the spectrum extracted 10 arc-second off the nucleus." In addition, the spatial extent of each spectral extract should be specified here, even if it's the full slit length (±3.7arc-sec centered on each position in the coma).

4. Cosmetics. pox2.pdf: On p. 1, "x" is missing from scaling in the 3 panels. On p. 2, "12x" shows as "2x", and for "60x", the "6" is cut off on the left.

5. Labeling of emission features on plots. Regarding the labeling of spectral features in the pox(0-3).pdf, some labels are purple, others are blue. Why is this? Does purple denote features that are seen, while blue denotes wavelengths of features that would be there but that are not seen? Please address.

Or do they refer to 0 versus 10 arc-sec offset spectra? For example, on p. 1 of pox1.pdf, the feature labeled "S₂ 6-3" near 3480 Å appears at least nearly coincident with a strong feature in the 10 arc-sec offset spectrum.

If label colors refer to nucleus-centered versus 10 arc-sec-offset extracts, one suggestion is to place labels for the 10 arc-sec extract in the middle (expanded vertically by 12x) panel; for example that on p.1 of pox1.pdf could be moved down from the upper to the middle panel. However other labels show no corresponding emission, either in orange or green spectra.

In any case this needs addressing in pox#.xml and/or in collection_description.txt.

6. Wavelength calibration. In collection_description under "Processing," some information should be included on wavelength calibration. Although flat-fielding, solar/16 Cyg B spectra for removal of dust continuum, and scattered light removal are mentioned, there is nothing on lambda-cal (arc-lamps, features in sky, solar analog spectra, etc?).