AB Aur - Spectroscopy

Science Case: lo-resolution grism spectroscopy to measure mid-IR SED and solid state bands (e.g. silicates, PAHs, ices, etc…)

Feasibility

1. **Has target been observed before?** [NO DEMO]
   a. https://dcs.arc.nasa.gov/
      i. Search on AB Aur (Resolve; FORCAST Grism only; AORs)
      ii. Note exposure time; you need propose for significantly more time
      iii. Pretend this hasn't been done though…
2. **On the ROC?**
   a. Check Call for Proposals: https://www.sofia.usra.edu/sites/default/files/Other/Documents/SOFIA_Cy8_CfP.pdf
   b. No ROC for FORCAST for OC8
3. **Wavelength coverage and grism selection:**
   a. Check out grism coverage/resolution in Table 4-4 of the Observers Handbook:
      https://www.sofia.usra.edu/science/proposing-and-observing/observers-handbook-cycle-8/4-forcast
      i. Note that sensitivity is impacted by telluric features.
      ii. Don't worry too much about tables as we will be using SITE to calculate the exposure times needed.
   b. Grism resolution (R: 100 -- 200) and coverage is fine for SED and solid state features (which are wide).
4. **Get fluxes from WISE (using IRSA) and estimate flux for each grism:**
   a. WISE Fluxes
      i. W2 (4.6): 10 Jy
      ii. W3 (12): 27 Jy
      iii. W4 (22): 50 Jy
   b. Grism flux estimates
      i. G063: 12 Jy
      ii. G111: 27 Jy
      iii. G227: 50 Jy
      iv. G329: ??
5. **Now calculate Inttime for desired S/N in each band.**
   a. https://dcs.arc.nasa.gov/proposalDevelopment/SITE/index.jsp
   b. Ideally would like S/N = 50 or higher to enable good telluric correction.
   c. 2.4" slit and power law with index=0, b/c in theory you don't know what the SED is.
   d. G063: inttime = 60 sec
   e. G111: inttime = 100 sec
   f. G227: inttime = 60 sec
   g. G329: inttime = 100 sec. (LS47 -- LS 24 not available for G329)

Feasibility looks good, so continue on with proposal…

Phase I Detail

1. Create target
2. Set up AOR for first band (Note which fields are required.)
   a. Edit Label
   b. Integration time
3. Chop/nod mode?
   a. only real question is do we need to use NXCAC mode so check WISE overlay to see if there is any nebulosity, nearby sources, etc…
   b. NMC should be fine
4. Now duplicate, rename, and update settings and label.
5. Note total duration…
6. Acquisition observations
   a. First verify S/N for 10sec inttime for F111 (or use shorter inttime)
   b. Note that you need Acq for *both* slit sizes (so two in this case)