

1. Use FITLD to read in the file HOME:SC004-X.MULTX which is the calibrated VLBA data at 8 GHz. Use SPLIT in AIPS to write out the data for J1807+2204 at 8.4 GHz, then use FITTP with DATAOUT='HOME:J1807+2204.UVF'. This is the gain calibrator for J1808.7. Read this calibrator source into Difmap and make the best image you can by iteratively self-calibrating and imaging (hint, start with "obs J1807+2204.UVF,10,true".) You should use the difmap cookbook (difmap-cookbook.pdf available from the class web pages) and the difmap 'help' files as needed. As you go along answer the questions below for the source. Select stokes 'RR' since Difmap cannot remove phase errors between RR and LL correlations. Apply the calibration you obtained on J1807+2204 to J1808.7. You can do this by running CALIB on the file SC004-X.MULTX using the image that you obtained with Difmap on J1807+2204 (after reading it into AIPS). Don't forget to run CLCAL to interpolate these solutions across all sources. This is phase referencing. Fix up phases first, then amplitudes.
  - a. What is the expected thermal noise for J1807+2204?
  - b. What is the rms noise off the source after self-calibration?
  - c. What is the final dynamic range in your image?
  - d. Can you find any bad data? Describe the time(s) and antenna(s) affected.
  - e. Make a model of the data using the "modelfit" command in Difmap using Gaussian components. Include a hardcopy of the model (text file).
  - f. What sort of chi-square agreement can you reach between the model and the data?
  - g. Provide three different estimates of the total flux density (from the model-fit, from the sum of the clean components, and from a box in the image plane).
  - h. Make a contour plot of your Stokes RR image and turn in a hard copy.
  - i) What are the typical phase corrections you are applying? Make an SNPLT of phases for IF 4, Stokes 'RR' on antennas 2, 3, and 4 of SN table 1
  - j) What are the typical amplitude corrections you are applying? Make an SNPLT of amplitudes (IF 4, RR) on antennas 2, 3 and 4 of SN table 2.
  
2. Image the 8 GHz VLBA data on J1808.7 using AIPS. Select the I polarization. The first image you make may have to be fairly large since we could have an error of up to 2 arcseconds. Once you find the source, make a smaller image (256 x 256) and turn in a contour plot of that smaller image with the appropriate RASHIFT and DECSHIFT to place the source within the image.