Homework Set 7 - PHYS 728 Radio Astronomy

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Problem 7.1: The figure below displays the phase at 5 GHz as a function of hour angle (from -60 to 60 degrees) for two different sources, one at 12.5 degrees declination and one at 33.2 degrees declination. The phases were measured with a baseline error (Bx, By, Bz), but no source position error. Using any means you wish, determine the baseline error from the data (i.e. determine the values of Bx, By, and Bz, in m) and plot the corrected data as a function of hour angle (scale your plot from 0-360 degrees). Describe the method you used to find the baseline error. Note: when you plot your corrected data, the phases should be flat, but not necessarily zero. You may require the IDL MOD function to keep your phase correction between 0 and 360. Hint: Look at the dependence of Eq. 3 of lecture 9 on hour angle.