1. [6pts] Calculate the flux of CN cycle neutrinos from the sun expected on earth (number of neutrinos per square centimeter and second). Use the conditions and composition in the center of the sun from solar model BS2005-AGS,OP (http://www.sns.ias.edu/~jnb/ and click through Solar Neutrinos - Solar models). You can neglect any CNO side branches, just use the main CN cycle.

2. [6pts] Calculate for comparison the total neutrino flux from the sun expected on earth. Do this based on energetics, using the known solar luminosity and the fact that all the energy is generated by fusion of hydrogen into 4He. You can assume the sun is in a thermal steady state.

3. [6pts] Show, using the composition in BS2005-AGS,OP that the main CN cycle in the sun is in steady state (in terms of the abundances involved), using the reaction rates from the JINA reaclib site. There are small corrections to the rates due to the stellar environment so this will not work out perfectly.