problem 5.

Derive the equations for transforming a spectrum from f_ν units (erg cm^{-2} s^{-1} Hz^{-1}) into f_λ units (erg cm^{-2} s^{-1} Å^{-1}) and vice-versa (hint: calculate the one-dimensional Jacobian of the transforms).

problem 6.

Find the (i) minimum resolution (FWHM) and (ii) the minimum sampling of a spectrum used for finding Earth-like planets in 1 AU circular orbits around Solar type stars using CaII H and K lines radial velocity curves.

Consider a 20% uncertainty in individual radial velocity measurements and a typical line center uncertainty of 1/15 x (FWHM resolution).