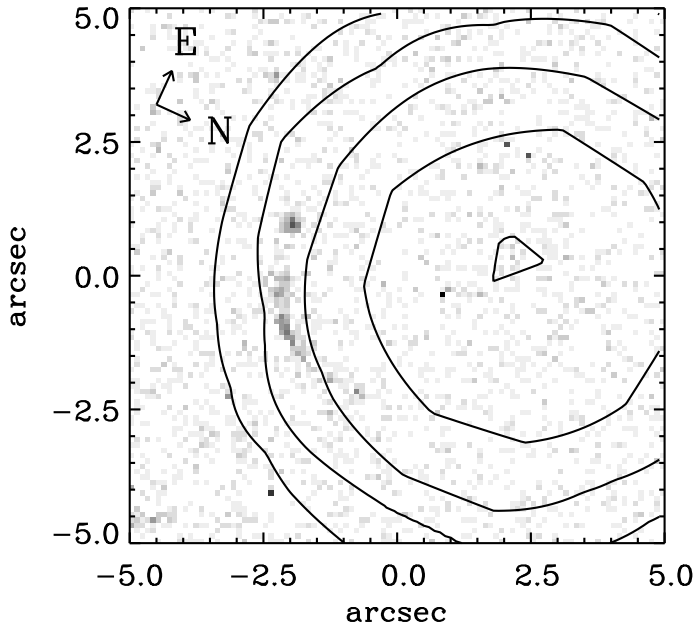
Homework 3.0

AST 422 Spring 2007



Dark Gravitational Lensing?

(a) Assume the radio source with $S_{1.4GHz} = 33$ mJy.
Optical $V \geq$25.0 mag (HST), and $K \geq$19.0 mag.
Use Longair Ch 2 to estimate the dark lens' *minimum* z.

(b) Lensed arc background galaxy has V = 24.8 mag. ($\lambda_V = 6000\mathring{A}$)
Use Longair Ch 18 (Fig 18.8) to estimate its *maximum* z.
Hint: Lynman break occures at $\lambda_{L_\alpha} = 1216\mathring{A}$ at $z = 0$.

(c) Use Longair Ch 4.3.4 to estimate the mass inside the Einstein Radius of the dark lens.
Remember you can use the Ned Wright's Cosmology Calculator:
http://www.astro.ucla.edu/ wright/CosmoCalc.html