Measurements for HH 7-11: extinguished line plus continuum at four wavelengths. Label wavelengths 1-4: 0.656, 1.26, 1.28, 1.64 microns, and call the measurements (pixel values, fluxes) .

Take as priors: zero-reddening flux ratios 

Assume that

1. the extinction is all foreground, and described by the Draine and Weingartner calculations. The extinction factor is of the form , where
2. the scattered light continuum is characterized by a single blackbody temperature *T,* that we can determine by fitting to non-line emitting regions. It will be a pretty low temperature as there’s no continuum evident in the Hα image.

**TASK 1:** Determine a good value for *T* by fitting to to the fluxes of the continuum filament by HH 8.

Then for each pixel we have four equations in four unknowns: the extinction-corrected fluxes and  of the longer-wavelength [Fe II] and H I lines; the extinction , and the scale factor *C* that multiplies the blackbody function for the continuum:

**TASK 2:** Write code for solving the nonlinear four equation/four unknown system.

**TASK 3:** Use the code to generate images in ; that is, extinction-corrected [Fe II]1.64 and Paβ.

**Bonus TASK (added by Adam on request…) …** Wait now we want to do 3 equations:

We want equations relating (fFe, C) or (Av,C) or (fFe,Av). We should inspect all of these to see if anything convenient shows up. We can use just f2 and f4 to work this out since f3 depends on fH which will depend on everything else. Elim fFe via subtraction (f2-RFe\*f4) to relate Av and C:

Try a ratio of f2 and f4 where we elim C to relate fFe and Av:

One last way is relating fFe and C…but that is non trivial. See as it would require trying logs (as in Av = log(f/…)):

We can get these in terms of the same base. We can just change logy4 to logy2 since basic log laws tell us:

Relating the insides…

Well that did not help too much. …technically solvable but it would be much easier to just plug in C and fFe into either f2 or f4 to get Av in terms of everything else…

Distribute y2^Av because I am hopeful still:

Now we group the Av thing onto one side as…

Simplify:

**Now we can simply solve the rest:**

**This means we have Av(T), and all the following are also solely in terms of T and f. This means given the original equations**

**We can plug f2,f3,f4,T into Av,fFe, C, and fH, get out these values, and…um…**