Subject: Re: MPFITFUN error -- only reading the first data value
Posted by Jeremy Bailin on Wed, 01 Apr 2015 18:14:04 GMT
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On Tuesday, March 31, 2015 at 5:45:03 PM UTC-5, graham kerr wrote:
> Hello everyone,
>
> I am trying to use mpfitfun to fit data observed at multiple wavelengths to a blackbody function, with temperature as the only variable; so I'm trying to find the best fit temperature.
>
> My function is called planck_fit_sot.pro, and is below. When I use mpfitfun the output has clearly only tried to fit the first data point. For a few test runs where I simulated blackbody intensities at multiple wavelengths (100 in total), the fitting routine returns the temperature that I set the first data point to. Also, yfit has only one value (the first), with all the rest '0'.
>
> Does anyone know what (presumably silly) mistake I've made here, and why mpfitfun is not using all the data to fit the function?
>
> cheers,
> Graham
> _____
>
> mpfitfun procedure where wave_rgb & data_rgb are input and temp_range and start_temp are included as optional input :-
>
> if n_elements(start_temp) eq 0 then start_temp = double(6000.0)
> parinfo = {value:0.0, fixed:0, limited:[0,0], limits:[0.0,0.0]}
> parinfo[0].value = start_temp
> parinfo[0].fixed = 0
> if n_elements(temp_range) eq 0 then begin
> parinfo[0].limited(*) = 0
> endif else begin
> parinfo[0].limited(*) = 1
> parinfo[0].limits[0] = temp_range[0]
> parinfo[0].limits[1] = temp_range[1]
> endelse
>
> fit_fn = mpfitfun('planck_fit_sot', wave_rgb, data_rgb, err, $
> parinfo = parinfo, double = double,$
> maxiter = 2000, bestnorm = bestnorm,$
> yfit = yfit, perror = perror, dof = dof,$
> status = status, errmsg=errmsg)
> _____
>
> planck_fit_sot.pro :-
>
> FUNCTION planck_fit_sot, wave, temp
>

```
>     ;Some constants
>     cc = 2.99792458d10    ;cm/s
>     hh = 6.62606957d-27  ;erg s
>     kb = 1.3806488d-16   ;erg/K
>
>     wave_cm = wave/1.e8  ;cm
>
>     bb_fn = dblarr(n_elements(wave))
>
>   ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;; ;;;;;;;
>  ;;;;;;;;;;;     DEFINE THE FUNCTION    ;;;;;;;;;
>   ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;; ;;;;;;;
>
>    ;2*h*c^2.0
>    const1 = double(2*hh*cc*cc)
>
>    ;h*c/k
>    const2 = double(hh*cc/kb)/wave_cm
>
>   ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;; ;;;;;;;
>
>    bb_fn =  const1 / ( wave_cm^5.0 * ( exp( const2]/temp)-1. ) )
>
>    bb_fn = bb_fn*1.d-8 ;ergs/s/cm^2/sr/Ang
>
>    bb_fn_watts = bb_fn/1.e7 ;W/cm^2/sr/Ang
>   ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;; ;;;;;;;
>
>    return, bb_fn_watts
>
>  end
```

As written it won't compile -- I'm guessing the "]" isn't supposed to be here:

```
  bb_fn =  const1 / ( wave_cm^5.0 * ( exp( const2]/temp)-1. ) )
```

Assuming that's fixed, I would speculate that your start_temp variable coming into the function is an array (possibly a 1-element array) instead of a scalar. Try "help, start_temp" to check.

-Jeremy.