
Subject: Re: interpolating flux

Posted by [Craig Markwardt](#) on Wed, 23 Jan 2013 16:15:12 GMT

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On Wednesday, January 23, 2013 7:06:51 AM UTC-5, idlhelp wrote:

> Dear All,

>

> I have two black body spectra at different temperature i.e at 5000K and 5200K. Does anyone know How I can interpolate the flux of black body spectra between 5000K 5200K at a step of 50K.

If it's a true black body spectrum, then consider that the spectrum can be computed exactly without interpolation.

http://en.wikipedia.org/wiki/Planck%27s_law

If you really want to use interpolation, I would recommend computing the $\text{ALOG}_{10}(\text{flux})$ of your gridded spectra, interpolating those log-values, then converting back to flux.

Craig

Subject: Re: interpolating flux

Posted by [Jeremy Bailin](#) on Wed, 23 Jan 2013 16:44:19 GMT

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On 1/23/13 6:06 AM, idlhelp wrote:

> Dear All,

> I have two black body spectra at different temperature i.e at 5000K and 5200K. Does anyone know How I can interpolate the flux of black body spectra between 5000K 5200K at a step of 50K.

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> thanks

>

>

Have you tried using INTERPOLATE?

-Jeremy.

Subject: Re: interpolating flux

Posted by [abc](#) on Wed, 23 Jan 2013 20:26:03 GMT

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On Wednesday, January 23, 2013 5:15:12 PM UTC+1, Craig Markwardt wrote:

> On Wednesday, January 23, 2013 7:06:51 AM UTC-5, idlhelp wrote:

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>
> Craig

thanks Craig, I didn't you properly, but my question is that how can I interpolate flux of two different synthetic spectra between two different temperature for e.g 1000K and 200K at a step of 50K i.e i want to create a new synthetic spectra at temperature 150K

Subject: Re: interpolating flux
Posted by [abc](#) on Wed, 23 Jan 2013 20:27:35 GMT
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On Wednesday, January 23, 2013 5:44:19 PM UTC+1, Jeremy Bailin wrote:

> On 1/23/13 6:06 AM, idlhelp wrote:
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>
> -Jeremy.

Hi Jeremy, I know that routine in IDL but how I can interpolate flux at 50K step

Subject: Re: interpolating flux
Posted by [Matthew](#) on Wed, 23 Jan 2013 21:49:47 GMT
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> I have two black body spectra at different temperature i.e at 5000K and 5200K. Does anyone know How I can interpolate the flux of black body spectra between 5000K 5200K at a step of 50K.

It won't work very well because you only have two data points. This is just one attempt. There are probably better ways (i.e. interpolating over a grid with INTERPOLATE).

```
nNewSpectra = 10
mySpectra5000 = randomu(3, 1, nNewSpectra)
mySpectra5200 = randomu(3, 1, nNewSpectra)
myT = [5000, 5200]

wantedT = findgen(nNewSpectra) / (nNewSpectra - 1.0D) * (5200 - 5000) + 5200

newSpectra = fltarr(nT, nNewSpectra)
for i = 0, nNewSpectra-1 do begin
    newSpectra[i,*] = interpol([mySpectra5000[i], mySpectra5200[i]], myT, wantedT)
endfor

end
```

Subject: Re: interpolating flux
Posted by [Matthew](#) on Wed, 23 Jan 2013 21:54:03 GMT
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Oh, forgot about the 50K step size... Just set nNewSpectra=4

Subject: Re: interpolating flux
Posted by [Russell Ryan](#) on Thu, 24 Jan 2013 19:41:13 GMT
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I think you misunderstood Craig, if I can speak for him.

If you're working with a *TRUE* blackbody spectrum, then you know an exact analytic answer for the spectrum as a function of both temperature and wavelength. Why, then, do you want to interpolate? Instead of simply evaluating that *KNOWN* analytical expression at whatever temperatures and wavelengths you think are useful or compelling? For example, the `planck()` function in the astro library is probably what you want.

Russell

On Wednesday, January 23, 2013 3:26:03 PM UTC-5, idlhelp wrote:

> On Wednesday, January 23, 2013 5:15:12 PM UTC+1, Craig Markwardt wrote:

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