Subject: Re: Plotting lookback time (in Gyrs) and redshift on two x axis in IDL
Posted by rryan%stsci.edu on Thu, 04 Dec 2014 20:40:09 GMT
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On Wednesday, December 3, 2014 4:56:59 PM UTC-5, johndra...@gmail.com wrote> I understand that i can make one axis logarithmic in scale but i don't think this helps me as redshift isn't logarithmic with respect to lookback time (res).
>
> I have worked out what redshift is with respect to lookback time in Gyrs:
>
> z=(sqrt((1.-omega_m)/omega_m)/sin(res*3*h*sqrt((1.-omega_m)/ (2*9.777505969))))
>
> Do you know if there is there anyway i can set the top axis to have this scaling within some set of values?
>
> please say if i haven't made it clear
>
> Thanks, John

The functional form you choose is irrelevant.

(1) Pick some redshifts for which you want the lookback time.
(2) compute the lookback time. You keep giving that equation, and I think that's wrong. Where is Omega_lambda? where is time? Look at galage() in the astrolib. that is what you want.
(3) now use the z values posited above with xtickv, xtickname, and axis to put the plot where you want.

```
xr=[0,10]
yr=[0,1]

z=[1,2,3,4]  ;redshifts to compute LB time for...


;Univ age at some redshift:
 t=galage(z,1000.,h0=69.6,omega=0.286,lambda=0.714,/sil)/1.0e 9

;Univ age at today
 t0=galage(0.,1000.,h0=69.6,omega=0.286,lambda=0.714,/sil)/1. 0e9

;LB time is difference...
lb=t0-t


;draw the plot
plot,[0],[0],xr=xr,xst=9,yr=yr,yst=1 ;set xst=9 to leave the top axis empty

;more plotting here
```

```
;draw the top axis
 axis,xaxis=1,xr=xr,xst=1,xtickv=z,xtickname=string(lb,f='(F4 .1)'),$
     xticks=n_elements(z)-1
```