
Subject: Re: Alternate plot scales

Posted by [Kevin P. Reardon](#) on Mon, 11 Jan 1999 08:00:00 GMT

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> Brad Grom wrote:
> I'm looking for a way to draw a secondary plot scale. The problem
> is that I want the second axis scale to be a function of the
> first.
>
> For example, the lower x-axis is a standard linear scale, and the
> upper x-axis is the square of the lower axis. Now the tricky
> part: I want the tickmarks for the second axis to occur at
> regular -numeric- (not graphical) intervals.

Brad,

just playing around I came up with something like this that seems to be at least in the general direction of what you were looking for. It ain't pretty (in particular, the rounding of step is pretty ad hoc), but it should at least give you some ideas on how to get what you want.

```
; create an X axis that runs from 50 to 10000
```

```
xaxis=(findgen(101)*99.5)+50
```

```
; plot data with no X axes
```

```
plot_oi,xaxis,findgen(100)+randomn(100,100)*1,$  
  xran=[max(xaxis),min(xaxis)],xsty=5,/ysty,ymargin=[10,2]
```

```
; choose a spacing (20 steps) and plot lower X axis
```

```
step=fix((((10^!x.crange(1)-10^!x.crange(0))/20.)/10.-0.5)*10  
axis,xaxis=0,/xlog,xtickv=findgen(21)*step+10000,xticks=20
```

```
; choose a spacing (30 steps)
```

```
step=fix((((10^!x.crange(1))^2-(10^!x.crange(0))^2)/30.) $  
  /1000.-0.5)*1000.
```

```
; plot upper X axis, the square-root of the lower X-axis
```

```
axis,xaxis=1,xrange=(10^!x.crange)^2,/xlog,$  
  xtickv=findgen(31)*step+(10^!x.crange(0))^2,xticks=30
```

```
; plot detached X axis with normal logarithmic spacing
```

```
axis,1,-15,xaxis=0,xrange=[1/(10^!x.crange(1)),  
  1/(10^!x.crange(0))],/xlog
```

```
; plot vertical lines
```

```
topticks=findgen(31)*step+(10^!x.crange(0))^2  
for i=0,30 do plots,(sqrt([topticks(i),topticks(i)]),!y.crange
```

One could also use the XTICK_GET keyword to get the values for

each tickmarks, and then a similar FOR loop for the vertical lines.
I hope this helps a bit.

cheers,
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