Subject: Re: A big BUG in PLOT, SURFACE, ...
Posted by theil on Fri, 16 Jun 1995 07:00:00 GMT
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Running on sun4 with SunOs 4.1.3 I get the arithmetic error but the plot looks fine. when the yrange is large enough, the error goes away, so the error probably occurs when IDL tries to calculate where on the plot the -1e15 point should lie. I do not know what the plotting bug looks like in the other OS's but from what I read, I guessed that some number in the graphics interface with the OS wraps around positive in the OS end when it goes too far negative in the IDL end.

I Tried the following experiment;
I defined d=dindgen(100).
I made a series of plots with d(10)=-1*double(10)^X, where X was a number I steadily increased. The X value where the plots start displaying improperly was 39, as in the first exponent which is beyond the range of a 32 bit float! So I made a series of plots where d(10)=-1*Y*double(10)^38 and incremented Y. I saw some plots with d(10) very negative and some with d(10) very positive; but never less than -3.40282E38. This is clearly some kind of wrap around problem when you reach the limit of a float.

I decided that it is a probably a problem in IDL rather than the OS, because when I did not specify the yrange, IDL would supply a yrange that fit the DISPLAY and not the DATA. with out knowing details of how the plotting routines work I can't be sure; perhaps IDL feeds info to the graphics of what to plot; the graphics driver wraps around and then tells IDL what is about to draw and then IDL comes up with tick labels based on this. Perhaps there is some other sort of mischief afoot. Regardless, the problem seems to occur at the limit of a float on my system and probably the limit of a long 2147483647 on the pc's etc.

MORAL: Don't stake your career on any plot if IDL complained while making it! If IDL does complain, find some other meaningful way to scale/display the data.
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No guts, no glory.