
Subject: Re: XSTRETCH and Library Lessons
Posted by news.verizon.net on Sat, 22 Apr 2006 16:05:09 GMT
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Coincidentally, I've been wrestling with a library name conflict but in this case it is a conflict with myself.

The IDL Astronomy Library (<http://idlastro.gsfc.nasa.gov/>) includes several procedures for FITS I/O, where FITS is the big-endian data format widely used in astronomy. The procedures currently check whether the user is on a little-endian machine, and if so, will perform the necessary byteswapping when reading or writing to a FITS file. However, by using the /SWAP_IF_LITTLE_ENDIAN keyword to OPENR(W) this can all be done transparently, and this "on the fly" byteswapping can improve the speed by a factor of two for large arrays on my Linux box.

However, for several of the FITS I/O routines there is a separate procedure for opening the FITS file (e.g. fits_open.pro, fxposit.pro) and another for reading/writing (e.g. fits_read.pro, mrdfits.pro) and so both procedures need to be updated. Essentially the byteswapping has moved from the I/O routine to the Open routine. So if the user downloads the new fits_open.pro but still has an old version of fits_read.pro laying around, then byteswapping will occur twice. Of if the user downloads the new mrdfits.pro but still has an old copy of fxposit.pro laying around, then no byteswapping will occur.

I had hoped that FSTAT() might return information about whether unit has been opened with endian swapping but this doesn't seem to be the case. I was also tempted to add a new keyword to the "Open" procedures on the theory that the error message

"Keyword SWAP_ENDIAN not allowed in call to: FITS_OPEN"

gives a better clue to the origin of the problem, than just finding that the FITS I/O routines are returning wrong endian garbage with no error message. In the end, I decided that the best solution was to give multiple warnings in the documentation and elsewhere (thus this message), though I'd be interested if anyone has other suggestions. --Wayne
