1   CURRENT MOUSSE SOFTWARE

This section contains a list some MOUSSE software (as of 26 July 1996) that is likely to be directly used by the interactive user. It does not include general IDL utilities (e.g. OPEN, ON_ERROR), special mathematical functions (e.g. SIN, VOIGT), type conversion functions (e.g. BYTE, FLOAT), 3-d graphics procedures, the IDL/BDR procedures, the model star cluster procedures or widget specific procedures. Also not shown are intrinsic IDL procedures that have been superceded by equivalent MOUSSE procedures (e.g. CTV supercedes TV). Reference to the DeAnza and IVAS have been deleted.

   The table shows whether the software is a native IDL PROCedure from the IDL USER's library, or a locally produced UIT procedure. Also shown is whether the routine has a FUNCtion rather than a procedure calling sequence. I have also tried to indicate when procedures work only on certain operating systems (Unix or VMS).

   A copy of this LaTeX file MOUSSE.TEX is kept on the DOC: directory, UIT$USER3:-[UITMISC.IDLV2.DOC]. Copies of UIT or User's library procedures can be obtained using GETPRO. Additional procedures are available in the IDL Astronomy User's Library. A complete list of procedures in the library can be found in the file 1DUA5:[IDLUSER]CONTENTS.TXT.

1.1   Annotation (Image display)

Name	Where	What
ARCBAR	UIT	Display a bar showing plate scale in arc minutes (X)
ARROW	USER	Draw an arrow between specified endpoints
ARROWS	UIT	Displays arrows on an image showing direction of north
IMOUTLINE	UIT	Draw outline where one image overlaps another
PLOTS	PROC	Draw vector on an image or graphics plane.
TVBOX	UIT	Draw a rectangle at specified position or at cursor
TVCIR	UIT	Draw circles with user-specified annotation
TVCIRCLE	UIT	Draw a circle at specified position or at cursor
TVELLIPSE	UIT	Draw an ellipse at specified poistion or at cursor
TVLABEL	UIT	Write text to graphics overlay at specified position
TVTIME	UIT	Display current date and time
WTITLE	UIT	Write a title to the current image window (X)
XYOUTS	PROC	Write annotation to the image display.

1.2   Array or Image Manipulation

AVG	USER	Calculate average value of image over 1 dimension (FUNCT)
BILINEAR	USER	Interpolate value of an image at subpixel level (FUNCT)
BOXAVE	UIT	Efficient box-averaging algorithm (FUNCT)
BYTSCL	FUNC	Linearly scale an array to the range 0-255
CCRTWARP	UIT	Like CRTWARP but computes source centroids

CONGRID	USER	Magnify or demagnify an image (FUNCT).
CONVOL	FUNC	Convolve an array with a specified kernel.
CORRELATE	USER	Compute correlation coefficient of 2 arrays (FUNCT)
CORREL_OPTIMIZE	UIT	Find pixel shift of two images that maximizes the correlation coefficient
CRTWARP	UIT	Warp an image to match a reference image by matching sources with the cursor.
DEFROI	USER	Define a region of interest on the image display (FUNCT)
DIGITAL_FILTER	USER	Compute coefficients of a non-recursive digital filter (FUNCT).
FINDSCRATCH	UIT	Find and remove scratches from a UIT image
FFT	FUNC	Fast Fourier Transform of an array
HANNING	USER	Window function for Fourier filtering
HIST_EQUAL	USER	Return a histogram equalized image (FUNCT)
HISTOGRAM	FUNC	Count-Intensity Distribution.
HBOXAVE	UIT	Boxaverage an image and update FITS header.
HCONGRID	UIT	Contract or expand an image and update FITS header
HEXTRACT	UIT	Extract a subimage and update FITS header.
HREBIN	UIT	REBIN an image and update the FITS header
HREVERSE	UIT	Reverse an image about X or Y axis and update header.
HROT	UIT	Rotate an image and update FITS header
IMAGE_CONT	USER	Overlay an image and a contour plot
IMCIRCLE	UIT	Blank the region outside of a circular image area (FUNCT)
IMLIST	UIT	Display image pixel values about a specified center
IMWARP	UIT	Use POLYWARP to warp one image to match another
INVERT	FUNC	Invert a matrix.
LEEFILT	USER	Lee filter algorithm on image array (FUNCT)
MATCH	UIT	Match values in two vectors.
MAX	FUNC	Maximum element of a vector or array.
MIN	FUNC	Minimum element of a vector or array.
MINMAX	UIT	Return 2 element vector giving the min and max (FUNCTION)
MEDARR	UIT	Median filter across a stack of images (e.g. for cosmic ray removal)
MEDIAN	FUNC	Median filter or median value of an array
POLY_2D	FUNC	Polynomial transformation of an array.
POLY_AREA	USER	Area of a polygon given coordinates of its vertices (FUNCT)
POLYFILL	PROC	Fill in interior of an irregular polygon
POLYFILLV	FUNCT	Return subscripts of elements inside a polygon
PROFILE	USER	Extract a profile from an image
REBIN	PROC	Expand or compress an image by averaging pixels.
REFORM	FUNC	Change dimensions of an array, same number of elements
REVERSE()	USER	Reverse an image about X or Y axis
RINTER()	UIT	Cubic interpolation, optionally get derivatives

ROBERTS	FUNCT	Edge detection by differencing diagonal pixels.
ROT()	USER	Rotate and/or magnify and/or translate an image
ROTATE	FUNC	Rotate or reverse in multiples of 90 degrees.
SCRATCH	UIT	Remove scratches from an image
SIGMA()	USER	Compute standard deviation of an array
SIZE	FUNC	Determine type and dimensions of an IDL variable
SMOOTH	FUNC	Smooth with a boxcar average
SOBEL	FUNC	Edge detection by differencing adjacent rows
SURFACE_FIT()	USER	Determine polynomial fit to a surface
SVD	PROC	Singular Value decomposition of a matrix
TABINV	UIT	Find the effective index of a function.
TABWARP	UIT	Transform a set of positions to match fiducials
THIN	FUNC	Obtain skeleton of an image
TRANSPOSE	FUNC	Transpose an array.
TOTAL	FUNC	Return the sum of the elements
WARP_TRI	USER	Warp an image using control points and triangulation
WHERE	FUNC	Find non-zero elements of an array.

1.3 Astronomical Routines

A_b()	UIT	DeVaucoulers law for galactic interstellar extinction
ABSCAL()	UIT	Multiply vector or array by BSCALE calibration in FITS header
ADSTRING	UIT	Format RA and Dec as a character string
ADXY	UIT	Interactive version of AD2XY
AD2XY	UIT	Convert from RA,Dec to pixel coordinates
ASTRO	UIT	Driver to compute precession, coordinate conversion
ASTROM	UIT	Least squares astrometric plate solution
ASTROMIT	UIT	Interactive driver for ASTROM
ASTSCALE	UIT	Transfer astrometry between images differing only in plate scale
BPRECESS	UIT	Rigorous precession from J2000 to B1950
BRUZUAL	UIT	Return synthetic galaxy spectra from the BRUZUAL database
CCM_UNRED	UIT	Deredden using Cardelli, Clayton & Mathis (1989) parameterization
CONS_RA()	UIT	Determine a line of constant right ascension
CONS_DEC()	UIT	Determine a line of constant declination.
CURVAL	UIT	Use cursor to display coordinates, intensities
DATE()	UIT	Convert day of year to Gregorian date
DAYCNV	UIT	Convert Julian date to Gregorian date.
EXTAST	UIT	EXTract ASTrometry parameters from a FITS header.
EULER	UIT	Astronomical coordinate conversions, called by EULER.
GAL_FLAT()	UIT	Transform image of a galaxy so it appears face-on
FLUX2MAG()	UIT	Convert from flux units to magnitudes
GCIRC	UIT	Compute rigorous great circle distance

GETROT	UIT	GET ROTation and plate scale from header or CD matrix
GLACTC	UIT	Convert between galactic and equatorial coordinates at any equinox.
GSSSEXTAST	UIT	Like EXTAST but for astrometry in a Guidestar image
GSSSXYAD	UIT	Like XYAD but for astrometry in a Guidestar image
GSSSADXY	UIT	Like ADXY but for astrometry in a Guidestar image
GSSS_STDAST	UIT	Add linear astrometry to a GSSS header
HASTROM	UIT	Rotate, compress/expand and shift an image to match astrometry in a reference header.
HPRECESS	UIT	Precess astrometry in a FITS header to a new equinox.
IMCONTOUR	UIT	Contour plot with astronomical labeling
IMLABEL	UIT	Write an RA,Dec overlay label over an image.
ISMEUV	UIT	Compute EUV attenuation due to HI, HeI and HeII opacity
JDCNV	UIT	Convert Gregorian date to Julian date.
JPRECESS	UIT	Rigorous precession from B1950 to J2000
KINNEY	UIT	Fetch a spectrum from the Kinney galaxy spectral atlas
KURUCZ	UIT	Generate Kurucz model atmosphere fluxes.
MAG2FLUX()	UIT	Convert from magnitudes to flux units
PLANCK()	UIT	Return blackbody flux for given effective temperature
PRECESS	UIT	Precess RA and DEC to a new epoch.
REDSHIFT	UIT	Convert between redshift, distance and velocity
PUTAST	UIT	Put astrometry parameters into a header.
RADEC	UIT	Format RA and DEC in Hours, minutes etc.
SIXTY()	UIT	Convert from decimal to sexigesimal
STARHOP	UIT	Interactive centroiding for astrometry.
STARAST	UIT	Extract astrometry solution from 2 or 3 stars.
TEN	UIT	Convert from sexigesimal to decimal.
TVAD	UIT	Move cursor to specified RA and Dec.
TVXY	UIT	Print RA and Dec of current cursor position.
UNRED	UIT	Deredden a flux vector using specified extinction curve
VIDEO	UIT	Rough astrometry solution using video overlay
XYAD	UIT	Interactive version of XY2AD.
XY2AD	UIT	Convert pixel coordinates to RA,Dec

1.4   Color Table Manipulation

ADJCT	USER	Interactively adjust color table using mousse
CONTRAST	UIT	Use trackball to control slope and midpoint of linear ITT function
COLOR_CONVERT	PROC	Convert between RGB and HSV colors systems.
COLOR_EDIT	USER	Interactive creation of color table using HLS color system
COLOR_QUAN	PROC	Create a pseudo "true-color" image on a workstation
CROLL	UIT	Roll the color lookup table at a specified rate.

GRCOL	UIT	Set graphics plane to specified color.
ITT	UIT	Modify the Intensity Transformation Table
ITTPLOT	UIT	Plot the ITT tranformation for the current plane
LOADCT	UIT	Menu of 32 predefined color tables.
MULTI	USER	Expand existing color table to wraparound n times.
PIXCOLOR	UIT	Assign a specified color to specified pixel values.
PLOTCT	UIT	Plot a color table.
SAVLUT	UIT	Read color table from image display and save in COMMON or file.
STRETCH	USER	Stretch color table range from Low to High.
TVBALL	UIT	Contrast control of individual color guns
TVLCT	PROC	Load color table from specified vectors.
REFSCL	UIT	Display Intensity Reference scale.
XLOADCT	USER	Widget-controlled color tables

1.5   Cursor Control

CROAM	UIT	Roam and zoom and update common blocks (SUN)
CWARPLIST	UIT	Like WARPLIST but use centroid instead of max pixel value
CZOOM	UIT	Zoom the image plane and update common blocks.
CURS	UIT	Menu of programmable cursors.
CTVRD	UIT	Read off the contents of an image plane.
CURSOR	PROC	Read off position of the image display cursor.
CURVAL	USER	Use cursor to display intensities and coordinates.
PROFILE()	USER	Extract 1-d profile across image with cursor
PROFILES	USER	Interactively draw row or column profiles (Xwindows)
SPYGLASS	UIT	Use compressed image to control display of large image.
STSECTION	UIT	Extract subimage from file using cursor on compressed image
TVCURSOR	UIT	Manipulate either fixed or programmable cursor.
TVLIST	UIT	Cursor controlled listing of an image.
WARPLIST	UIT	Cursor select corresponding sources on 2 different windows
WZOOM	UIT	Zoom up a window and its contents (X-windows)
ZOOM	USER	Quick zoom of image in a separate window (X-windows)

1.6   DAOPHOT and Photometry Procedures

APER	UIT	Circular APERture photometry.
CHNGXY	UIT	Convert X,Y values in different image reference frames
CNTRD	UIT	Find centroid of a stellar image.
FIND	UIT	FIND point sources within an image.
FTSRCOR	UIT	Correlate sources on two FITS tables
GETPSF	UIT	Obtain a PSF (gaussian + residuals) from isolated star(s).

GROUP	UIT	Place stars with non-overlapping PSF's in distinct groups
ISOSTR	UIT	Find isolated stars for PSF fitting
MMM	UIT	Sophisticated sky background computation.
NSTAR	UIT	Simultaneous PSF fitting of a group of stars.
RDPSF	UIT	Read a PSF disk file created by GETPSF.
SKY	UIT	Compute image sky level using MMM.
SRCOR	UIT	Match source positions in two listings
SUBSTAR	UIT	Subtract stars from an image using a scaled PSF
T_FIND	UIT	Like FIND with I/O to FITS tables
T_APER	UIT	Like APER with I/O to FITS tables
T_GROUP	UIT	Like GROUP with I/O to FITS tables
T_GETPSF	UIT	Like GETPSF with I/O to FITS tables
T_NSTAR	UIT	Like NSTAR with I/O to FITS tables
T_SUBGROUP	UIT	Break up a group in a FITS table using a revised table
T_SUBSTAR	UIT	Calls SUBSTAR using input from a FITS table
UIT_APER	UIT	UIT photographic version of APER
UIT_FIND	UIT	UIT photographic version of FIND
UIT_NSTAR	UIT	UIT photographic version of NSTAR
UIT_GETPSF	UIT	UIT photographic version of GETPSF.

1.7   Database Procedures

DBCIRCLE()	UIT	Search database for objects within a circular area
DBCLOSE	UIT	Close a database
DBEDIT	UIT	Interactively edit the entries in a database
DBEXT	UIT	Extract items from a database into IDL variables
DBFIND()	UIT	Find entries meeting specified criteria
DBGET()	UIT	Use instead of DBFIND when search values are in IDL vector
DBHELP	UIT	List names of databases, or entries within a database
DBMATCH()	UIT	Match entries one-to-one with item values
DBOPEN	UIT	Open a database
DBPRINT	UIT	Print specified fields about specified entries
DBSORT()	UIT	Sort items from a database
IMDBASE	UIT	Find catalog sources within a specified image
SHOWDB	UIT	Show catalog sources near the specified cursor position
TVDBASE	UIT	Overlay boxes on the image display at source positions found in specified database.

1.8   Help

?	PROC	Spawn to the IDL hyperhelp display
DELVAR	PROC	Delete specified variable from one's IDL session.

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FINITE()	PROC	Test whether an argument is finite.
FSTAT()	PROC	Return information about a disk file
GETPRO	UIT	Put an IDL library procedure on your directory
GETVAX	UIT	Get the Vax copy of a MOUSSE procedure (SUN)
HELP	PROC	Describe variables, files.
JOURNAL	PROC	Open or close a journal file of the IDL session.
MAN	UIT	Obtain online documentation of any procedure
MESSAGE	PROC	Issue error and informational messages.
NEWS	UIT	Print changes to MOUSSE software in chronological order
TVSTATUS	UIT	Status of image display
XDL	USER	Display widget help for any procedure in one's !PATH

1.9   File access

DFITSRD	UIT	Convert a disk FITS file to STSDAS format.
DFITSWRT	UIT	Convert from STSDAS format to a disk FITS files
FITSDIR	UIT	Give a directory of FITS files on disk
FITS_INFO	UIT	Describe FITS files on disk
HEADFITS()	UIT	Read a FITS header from a disk FITS file
HEADERSTRING	UIT	Extract a "title" from a FITS header
HINFO	UIT	Summarize the info in a FITS header in a pretty format
HPRINT	UIT	Print a FITS header array in a nice format at the terminal
IRAFRD	UIT	Read a simple IRAF disk file to IDL variables.
IRAFDIR	UIT	Display directory of IRAF files on specified directory.
IRAFWRT	UIT	Write IDL image and header to IRAF .imh and .pix files
MKHDR	UIT	Make a minimal FITS header for an image array
MODFITS	UIT	Modify the header or data in a FITS file
ODRD	UIT	Read an SDAS image from the optical disk (VMS)
READFITS()	UIT	Read a disk FITS file into IDL variables
STDIR	UIT	Give directory of SDAS images on disk.
STRD	UIT	Read in SDAS header and array (SXOPEN + SXREAD).
STSUBIM	UIT	Like STRD but allows a subimage to be extracted.
STWRT	UIT	Write an IDL image and/or header to disk in SDAS format.
SXADDHIST	UIT	Add a history record to a FITS header.
SXADDPAR	UIT	Add or modify a parameter in a FITS header.
SXDELPAR	UIT	Delete a keyword from an FITS header.
SXGREAD()	UIT	Read group parameters from an STSDAS file.
SXGPAR()	UIT	Obtain group parameter in FITS file
SXHEDIT	UIT	Interactively edit an FITS header on disk using EDT (VMS).
SXHREAD	UIT	Read an FITS header from disk
SXHWRITE	UIT	Write an FITS header to disk
SXOPEN	UIT	Open a SDAS formatted header file.

SXPAR()	UIT	Obtain the value of a parameter in a FITS header
SXREAD()	UIT	Read in an SDAS image array from disk
SXWRITE	UIT	Write a group of data and parameters in ST format.
WRITEFITS	UIT	Write an IDL image to a disk FITS file

1.10 FITS Image I/O

CHECK_FITS	UIT	Check that a FITS image and header array agree
DFITSRD	UIT	Convert a disk FITS file to STSDAS format.
DFITSWRT	UIT	Convert from STSDAS format to a disk FITS files
FITSLIST	UIT	Read the headers from a FITS tape (VMS)
FITSRD	UIT	Read a FITS tape file into SDAS disk format.
FITSWRT	UIT	Write a STSDAS disk file to a FITS tape.
FITS2X	UIT	Read a simple FITS tape directly to IDL variables (VMS).
FXREAD	UIT	Like READFITS but can read a subarray of primary image
HEADFITS()	UIT	Read a FITS header from a disk FITS file
READFITS()	UIT	Read a disk FITS file into IDL variables
WRITEFITS	UIT	Write an IDL image array to a disk FITS file
X2FITS	UIT	Write an IDL array to a FITS tape (VMS)

1.11 FITS Table I/O

FTADDCOL	UIT	Add a new column to a FITS table
FTCREATE	UIT	Create an empty FITS table
FTDELCOL	UIT	Delete specified column from a FITS ASCII table
FTDELROW	UIT	Delete specified row(s) from a FITS ASCII table
FTDIR	UIT	Give a directory of modified FITS ASCII tables on disk
FTGET()	UIT	Extract specified row(s) from field
FTHELP	UIT	Print a description of a FITS table header
FTKEEPROW	UIT	Specify rows to keep in a FITS ASCII table
FTPRINT	UIT	Print a table in ASCII format
FTPUT	UIT	Update or add a new field to a FITS table
FTREAD	UIT	Read a FITS table from disk
FTSORT	UIT	Sort columns in a FITS table
FTSRCOR	UIT	Correlate positions in two FITS tables
FTWRITE	UIT	Write a FITS table to disk

1.12 Image Display

BLINK	UIT	Blink specified channels on the image display.
CDEL	UIT	Delete the specified window (X windows)
COPYCHAN	UIT	Copy image from one channel or window to another.

CHAN	UIT	Display specified window (X)
CTV	UIT	Display an IDL image array on the TV without scaling
CTVSCL	UIT	Display an IDL image array, scaled between 0 and 255.
FLICK	USER	Flick between two different windows. (X windows)
ROAM	UIT	Widget display of full-resolution and compressed image
ROAM2	UIT	Widget display of a pair of large images
TVLASER	UIT	Write displayed picture to a postscript file
UNZOOM_XY	UIT	Convert TV coordinates to image coordinates
ZERO	UIT	Erase a specified image plane
ZOOM_XY	UIT	Convert image coordinates to TV coordinates

1.13   Miscellaneous

BSORT()	UIT	Perform a bubble sort of a vector (c.f. SORT)
BYTEORDER	PROC	Swap the bytes in a longword or shortword array
DATATYPE()	UIT	Get the datatype of an IDL variable
FORPRINT	UIT	Print a set of vectors as if using a FOR loop.
HOST_TO_IEEE	UIT	Convert from host data representation to IEEE
HPRINT	UIT	Print a FITS header array in a nice format at the terminal
IEEE_TO_HOST	UIT	Convert from IEEE data representation to host
IUE	UIT	Add system variables, logicals, !PATH to run IUE RDAF software
IUEFX	UIT	Copy an IUE file from the NDADS optical disk (first call IUE)
JOURNAL	PROC	Open or close a journal file of the IDL session.
MOUSSE	UIT	Initialize MOUSSE system variables, !PATH directories
RDFLOAT	UIT	Quickly columns of data into floating pt. IDL vectors
READCOL	UIT	Quickly read a free-format ASCII disk file into IDL vectors
READFMT	UIT	Quickly read a fixed-format ASCII disk file into IDL vectors
SORT()	PROC	Sort a vector
SYSINT	UIT	Complete initialization of the image display
TEMPORARY()	PROC	Make a variable "temporary" to save virtual memory.

1.14   Photometry (also see DAOPHOT)

ANNSTATS	UIT	Photometry in annular apertures using DAOPHOT photometry
APEROI	UIT	Obtain fluxes within region defined by DEFROI
CIRCINT	UIT	Integrate in circular apertures
DIST_CIRCLE	UIT	Create an array where each pixel value is equal to its distance to a specified center (for circular aperture photometry)
DIST_ELLIPSE	UIT	Create a mask array useful for elliptical aperture photometry
IUEAPER	UIT	Compute flux on an image within an IUE aperture

SHOWPHOT	UIT	Widget display and computations on photometry table(s)
TVAPER	UIT	Display an aperture growth curve around a star

1.15   Plotting (1 and 2-dimensional)

CLEANPLOT	UIT	Reset plotting system variables to their default value
CONTOUR	PROC	Make a contour plot on the default plotting device
ERRPLOT	USER	Overplot error bars over previously drawn plot
LEGEND	UIT	Create a legend for the plot annotation
MULTIPLOT	UIT	Multiple plots stacked with common axes
OPLOT	PROC	Overplot vector over old axis.
OPLOTBAR	USER	Overplot a bar graph and fill in with a pattern
OPLOTERR	USER	Overplot data points with accompanying error bars.
PLOT	PROC	Plot array on new axis, set scaling
PLOTBAR	USER	Plot a bar graph filled in with a pattern
PLOTERR	USER	Plot data points with accompanying error bars
PLOTHIST	UIT	Plot the histogram of a vector
PLOTS	PROC	Plot vectors or points using data coordinates
PLOTSYM	UIT	Create plotting symbols not in standard PSYM definition
PLOTVAL	UIT	Interactively read the values off of a plot
PLOT_IO	PROC	Plot with linear-log scaling
PLOT_OI	PROC	Plot with log-linear scaling
PLOT_OO	PROC	Plot with log-log scaling
PSIMLABEL	UIT	Write an image to postscript printer labeled by RA and Dec
PSPLOT	PROC	Send a postscript plot file to the laser printer
PUBPLOT	UIT	Widget interface to make pretty plots
PWIDGET	PROC	Widget interface to make pretty plots
SETPLOT	UIT	Select image and plotting output device.
SET_SCREEN	USER	Set location of plot on screen (device dependent)
SET_VIEWPORT	USER	Set location of plot on screen (device independent)
SHOW3	USER	Fancy display of 2-d array combining CONTOUR & SURFACE
SURFACE	PROC	Plot surface of 2D array with hidden line removal
XSURFACE	USER	Widget interface to the SURFACE procedure
XYOUTS	PROC	Write text to selected output device.
THREED	USER	Plot 2-D array as a pseudo 3-D plot.
VELOVECT	USER	Two dimensional velocity field plot

1.16   Spectral Analysis 1-D

FLUXAVG	UIT	Integrate a flux spectrum over a filter curve
GAUSSFIT	USER	Fit a gaussian plus quadratic background

GETWAVE	UIT	Create a wavelength vector from info in a FITS header
INTERPOLATE()	PROC	Linear, bilinear, or trilinear interpolation
KSONE	UIT	Compute the one-sided Kolmogoroff-Smirnov statistic
KSTWO	UIT	Compute the two-sided Kolmogoroff-Smirnov statistic
LINTERP	UIT	Linear interpolation of a lookup table.
LINTERPOL	UIT	Interpolation in the logarithm
MULTREGRESS	UIT	Compute multiple linear regression statistics
QUADTERP	UIT	Quadratic interpolation of a lookup table
QTRAP	UIT	Numeric integration to specified accuracy using extended trapezoidal rule
QSIMP()	PROC	Numeric integration to specified accuracy using Simpson's rule
SIXLIN	UIT	Compute X,Y linear regression 6 different ways
TSUM()	UIT	Trapezoidal integration of a function

1.17   String Manipulation

FDECOMP	UIT	Decompose a file name (Disk + Extension + Version)
GETFILES	UIT	Interactively specify a list of files.
GETOPT()	UIT	Read in parameter value(s) as strings
GETTOK()	UIT	Extract string up to specified character
GETWRD()	UIT	Get Nth item in a string delimited by spaces
OSFCNVRT()	UIT	Convert a logical directory name to the host OS
REMCHAR()	UIT	Remove all appearances of a character from a string
REM_DUP()	UIT	Function to remove duplicate values from a vector
REPCHR()	UIT	Replace all appearances of one character by another
REPSTR()	UIT	Replace all appearances of one substring by another
STRCOMPRESS()	PROC	Compress white space (blanks and tabs)
STREBCASC()	UIT	Converts EBCDIC string to ASCII
STRLEN	PROC	Return number of characters in a string.
STRLOWCASE	PROC	Convert a string to lower case.
STRMESSAGE	PROC	Obtain the text of an error message.
STRMID	PROC	Extract a substring from a string.
STRN()	UIT	Convert number to a string and remove padded spaces
STRPOS()	PROC	Search for a substring in a string.
STRPUT	PROC	Put contents of one string into another.
STRTRIM	PROC	Remove leading or trailing blanks from a string.
STRUPCASE	PROC	Convert a string to uppercase.
VECT()	UIT	Display set of numbers as a string with delimiters

1.18   UIT processing specific

BDRASTROM	UIT	Add astrometry (from HDRS database) to a UIT FITS header
BIGDIV	UIT	Divide a 2048 x 2408 image by a flatfield image
CALFIX	UIT	Update calibration of UIT images to most recent values
CHARCURVE	UIT	Return the UIT characteristic curve
CHNGCAM	UIT	Use A camera astrometry to determine B camera astrometry
COMPRESS	UIT	Compress a 2048 x 2048 UIT image file
DARKSPOT	UIT	Draw circles around positions of known UIT turn-on spots
DISKNET	UIT	Transfer an SDAS disk file from IBM to VAX
DIST_COORD_CONV	UIT	Correct an UIT coordinates for geometric distortion
DIST_MODEL_COEF	UIT	Return coefficients for UIT image distortion model
DISTWARP	UIT	Warp a UIT image to correct for image distortion
FETCHFILE	UIT	Transfer an ASCII file from VAX to SUN
FETCHIMAGE	UIT	Transfer and byteswap an image from VAX to SUN
FINDSCRATCH	UIT	Find and remove scratches from a UIT image
FFVAR()	UIT	Return the variance of UIT 20 micron pixels
FITSNET	UIT	Read a FITS tape on the IBM to a file on the VAX
FITSTREE	UIT	Send/Fetch FITS file to/from the UniTree mass store
FIXQ13	UIT	Fix the EQUINOX keyword in a QUICK 13 UIT FITS header
FIXSPOTS	UIT	Fix the "measles" spots in lunar Astro-2 images
GET_UIT_MAG	UIT	Convert theoretical stellar parameters into the UIT filter system
GLOG	UIT	List ground based UIT support images and copy from IBM (VMS)
HLOG	UIT	List Kitt Peak UIT support images and copy from IBM (VMS)
IDLBDR	UIT	Run the IDL emulation of the UIT batch reduction software
IDLBDR_SUB	UIT	IDL processing of a portion of a Astro-2 substepped image
IMDIR	UIT	Quickly list UIT images currently on any VAX disk (VMS)
QTREE	UIT	Obtain UIT FLIGHT 15 (or FLIGHT14) data products
QTREE21	UIT	Obtain UIT FLIGHT 21 (Astro-2) data products
PIXELCHECK	UIT	Determine if a set of pixels are within UIT dark spots
PRETEK	UIT	Save current image display for subsequent display on color Tektronics
RD_SCAN_NOTES	UIT	Display PDS notes about a UIT flight frame
RDTABUIT	UIT	Read BDR photometry tables from standard directories
RDUITFIL	UIT	Read the UIT filter response curves.
SHOWTAB	UIT	Overlay UITPHOT photometry tables on current image
SHOWUIT	UIT	Quickly display a UIT image on disk (VMS only)
STACK	UIT	Stack several UIT images together
STRIPEX	UIT	Remove the vertical stripe from an Astro-2 UIT image
SUBSTEP_GEOM	UIT	Rotate and undistort a substepped UIT image
TEK	UIT	Display an image on color Tektronics that had been saved with PRETEK
TBLFIX	UIT	Update calibration of UIT tables from data stream FLIGHT12
TOIBM	UIT	Write an SDAS disk file to a tape on the IBM (VMS)

UITASTROM	UIT	Add a rough astrometry solution to a UIT header
UITCIRCLE	UIT	Select postions within the UIT circle
UITDIR	UIT	Give info about the UIT images on specified directory
UITFILTER()	UIT	Convolve a spectrum through a specified UIT filter

1.19   Tape I/O

FBTAPE	UIT	Read a fixed block tape to disk.
FITSRD	UIT	Read a FITS tape file into SDAS disk format.
FITSWRT	UIT	Write a STSDAS disk file to a FITS tape.
PDSRD	UIT	Read any size (up to 8192 x 4096) PDS image from tape.
X2FITS	UIT	Write an IDL array to a FITS tape

1.20   Operating System Interface

DEFINE	UIT	Make a DCL logical or a Unix enviromnet assignment in IDL
DIR	UIT	Emulate a (brief) DCL directory command
EDT	USER	Enter the EDT editor without spawning a subprocess (VMS)
EVE	USER	Enter the EVE editor without spawning a subprocess (VMS)
EMACS	UIT	Enter the EMACS editor
GETENV()	PROC	Return a Unix environment variable or DCL logical name
GET_SYMBOL	FUNC	Return the value of a VMS symbol as a scalar string
SD	UIT	Show or change the IDL default directory
SETENV	PROC	Add or change an environment string (Unix)
SET_SYMBOL	PROC	Make a DCL symbol assignment within IDL (VMS)
SPAWN	PROC	Send a VMS or shell command from within IDL
TRNLOG	FUNC	Return a VMS logical name as an IDL variable (VMS)
TYPE	UIT	Emulate VMS command TYPE/PAGE.