Portable Image Format for EM Data (PIF)

(last update Oct 29, 1998)

One time file header - 60 bytes -->> 512 total

file_id	BYTE*8	Magic bytes - First 4 bytes ignored.
RealScaleFactor	char[16]	How to convert floatInt*4 into real*4
/* 24 */		
numImages	int*4	Number of images in this file
/* 28 */		
endianNess	int*4	What endian type of machine created this file 0 = VAX/DECstation (Little) 1 = SGI etc... (Big)
/* 32 */		
genProgram	char[32]	Program used to generate this file with version number
/* 64 */		
htype	int*4	1 - all projections have the same number of pixels and the same depth (number of bits per pixel) 0 - otherwise
nx	int*4	Number of columns
ny	int*4	Number of rows
nz	int*4	Number of sections
/* 80 */		
mode	int*4	EM data type e.g. 0 = byte*1 - Zeiss scans 1 = int*2 2 = floatInt*4 3 = complex int*2 4 = complex floatInt*4 5 = Structure Factors 6 = Boxed data –

		unfloated with background value placed past radius of box. 7 = floatInt*2 8 = complex floatInt*2 9 = float*4 10 = complex float*4 20 = MAP floatInt*2 21 = MAP floatInt*4 22 = MAP floatInt*4 PFTS rot*4 dimension 31 = Structure Factors Amp/Phase floatInt*4 32 = Structure Factors Apart/Bpart floatInt*4 88 = Accumulated TIF's in int*2 (st2pif) 97 = DEPTHCUED etc...
futureUse	int*4 (428 bytes)	Save some space for use later

If DEPTHCUED file:

colorMap	int*2 (*256*3 = 1536 bytes)	The color Map

Data header block (for each image) - 300 bytes -->> 512 total

nx	int*4	Number of columns
ny	int*4	Number of rows
nz	int*4	Number of sections
mode	int*4	EM data type e.g. 0 = byte*1 - Zeiss scans 1 = int*2 2 = floatInt*4 3 = complex int*2 4 = complex floatInt*4

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                                                  5 = Structure Factors
                                                  6 = Boxed data -
                                                      unfloated with
                                                      background value
                                                      placed past
                                                      radius of box.
                                                  7 = floatInt*2
                                                  8 = complex
                                                      floatInt*2
                                                  9 = float*4
                                                 10 = complex float*4
                                                 20 = MAP floatInt*2
                                                 21 = MAP floatInt*4
                                                 22 = MAP floatInt*4
                                                      PFTS rot*4
                                                      dimension
                                                 31 = Structure Factors
                                                       Amp/Phase
                                                      floatInt*4
                                                 32 = Structure Factors
                                                       Apart/Bpart
                                                      floatInt*4
                                                 88 = Accumulated TIF's
                                                      in int*2 (st2pif)
                                                 97 = DEPTHCUED etc...
/* 16 */
     bkgnd               int*4          Background value
     packRadius          int*4          Radius of boxed image
     nxstart             int*4          Number of first col in map
     nystart             int*4          Number of first row in map
     nzstart             int*4          Number of first section in
                                        map
     mx                  int*4          Number of intervals along
                                        x
     my                  int*4          Number of intervals along
                                        y
     mz                  int*4          Number of intervals along
                                        z
/* 48 */
     xlength             floatInt*4     Cell Dimensions
                                        (Angstroms)
     ylength             floatInt*4          "
     zlength             floatInt*4          "
     alpha               floatInt*4     Cell Angles (degrees)
     beta                floatInt*4          "
     gamma               floatInt*4          "
/* 72 */
     mapc                int*4          Which axis is col(1,2,3 =
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                                        x,y,z)
     mapr                int*4          Which axis is row(1,2,3 =
                                        x,y,z)
     maps                int*4          Which axis is
                                        sections(1,2,3 = x,y,z)
     min                 floatInt*4     Min density value
     max                 floatInt*4     Max density value
     mean                floatInt*4     Mean density value
     stdDev              floatInt*4     StdDev of GrayLevels
/* 100 */
     ispg                int*4          Space group number
     nsymbt              int*4          Number of bytes for
                                        symetry ops
     xorigin             floatInt*4     x origin
     yorigin             floatInt*4     y origin
/* 116 */
     title/description   char[80]       User defined description
     timeStamp           char[32]       Date/time data last
                                        modified
     microGraphDesignation char[16]     Unique Micrograph Number
     scanNumber          char[8]        Scan Number of Micrograph
     aoverb              floatInt*4     AOVERB
     map_abang            floatInt*4    MAP_ABANG
/* 260 */
     dela                floatInt*4     DELA
     delb                floatInt*4     DELB
     delc                floatInt*4     DELC
/* 272 */
     t_matrix            int*4[6]       t_matrix (array of 6 ints)
/* 296 */
     dthe                floatInt*4     dthe
/* 300 */
     dphi_90             floatInt*4     dphi_90
/* 304 */
     symmetry            floatInt*4     symmetry
/* 308 */
     binFactor           int*4          Image compression factor
     a_star              floatInt*4     emsf3dbt/emmap3dt stuff
     b_star              floatInt*4
     c_star              floatInt*4
     alp_star            floatInt*4
     bet_star            floatInt*4
     gam_star            floatInt*4
     pixelSize           floatInt*4     From em3dr
     futureUse           int*4 (160 bytes) Save some space for use
                                           later

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Image data block (for each image)

image_data	Either: BYTE*1 int*2 int*4 floatInt*4 Complex int*2 Complex floatInt*4