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SBIG
ASTRONOMICAL
INSTRUMENTS

Applications Note

ST-4 Image File Format for the Macintosh

This applications note describes the format of image files created by the Macintosh version of the ST-4 host computer program (SBIG ST4). The image files contain the 8-bit pixel data for the 192 horizontal by 165 vertical pixel images as well as the telescope calibration factors, file note and cropping values, and the settings from the Contrast window.

The pixel data is saved in the data fork of the file in left to right, top to bottom order: The first byte corresponds to the left-most pixel in the top line, the 2nd byte corresponds to the 2nd pixel in the top line, the 193rd byte corresponds to the left-most pixel on the 2nd line, etc. The data should be interpreted as unsigned bytes (values from 0 through 255). This is shown below in Figure 1.

Data Fork

Pixel x,y	1,1	2,1	3,1	...	192,1	1,2	2,2	...	1,165	...	192,165
Byte:	1	2	3	...	192	193	194	...	31489	...	31680

Figure 1

The resource fork of the image files contains several resources which are used to hold the telescope calibration factors, etc. Typically, these resources will only be of use to the SBIG ST4 program itself, but you might desire to interrogate them to find the exposure time, etc. Each of these resources is described individually below:

Resource type 'ConT' ID 128
This resource contains the settings from the Contrast window. A C type definition for this resource is given below in Figure 2. The min and range entries are the settings from the Back and Range items, the zoom entry will be 0 or 1 for 1:1 and 2:1 respectively, and the three entries smooth, invert, and interpolate will be TRUE if those items were selected.

```
typedef struct {
    int min, range;
    int zoom;
    Boolean smooth;
    Boolean invert;
    Boolean interpolate;
} CONTRAST;
```

Figure 2

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Resource type 'ImgI' ID 128
This resource contains the telescope factors accessed through the Info command in the Image menu. A C type definition for this resource is shown below in Figure 3. The fl, aperture, correction, and time entries contain the telescope's focal length (inches) and aperture area (square inches), the calibration factor and exposure time (seconds) respectively. The top, left, right, and bottom entries are the cropping amounts in pixels.

```
typedef struct {
    double fl, aperture;
    double correction;
    double time;
    int top,left,right,bottom;
} IMAGE_INFO;
```

Figure 3

Resource type 'nOtE' ID 128
This resource contains the note attached to the image using the Note command in the Image menu. A C type definition for this resource is shown below in Figure 4. Note that the note is a Pascal format string of maximum length 255 with the first byte of the string giving the string length.

```
typedef struct {
    Str255 note;
} IMAGE_NOTE;
```

Figure 4