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5.4.3 Good Time Interval Filtering

A common filtering method involves selecting rows which have a time value which lies within what is called a Good Time Interval or GTI. The time intervals are defined in a separate FITS table extension which contains 2 columns giving the start and stop time of each good interval. The filtering operation accepts only those rows of the input table which have an associated time which falls within one of the time intervals defined in the GTI extension. A high level function, `gtifilter(a,b,c,d)`, is available which evaluates each row of the input table and returns TRUE or FALSE depending whether the row is inside or outside the good time interval. The syntax is

```
gtifilter( [ "gtifile" [, expr [, "STARTCOL",  
"STOPCOL" ] ] ] )
```

where each "[]" demarks optional parameters. Note that the quotes around the `gtifile` and `START/STOP` column are required. Either single or double quote characters may be used. The `gtifile`, if specified, can be blank ("") which will mean to use the first extension with the name `"*GTI*"` in the current file, a

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plain extension specifier (eg, "+2", "[2]", or "[STDGTI]") which will be used to select an extension in the current file, or a regular filename with or without an extension specifier which in the latter case will mean to use the first extension with an extension name "*GTI*". Expr can be any arithmetic expression, including simply the time column name. A vector time expression will produce a vector boolean result. STARTCOL and STOPCOL are the names of the START/STOP columns in the GTI extension. If one of them is specified, they both must be.

In its simplest form, no parameters need to be provided - default values will be used. The expression `"gtifilter()"` is equivalent to

```
gtifilter( "", TIME, "*START*", "*STOP*" )
```

This will search the current file for a GTI extension, filter the TIME column in the current table, using START/STOP times taken from columns in the GTI extension with names containing the strings "START" and "STOP". The wildcards (*) allow slight variations in naming conventions such as "TSTART" or "STARTTIME". The same default values apply for unspecified parameters when the first one or two parameters are specified. The function automatically searches for TIMEZERO/I/F keywords in the current and GTI extensions, applying a relative time offset, if necessary.

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