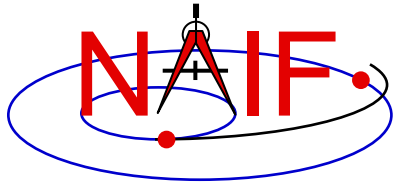


Navigation and Ancillary Information Facility

Using Module Headers

January 2020

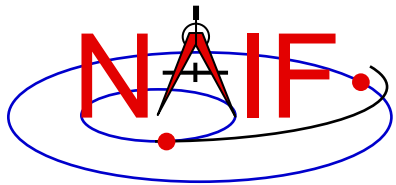


Topics

Navigation and Ancillary Information Facility

- **Module* Header Purpose**
- **FORTRAN Module Header Locations**
- **C Module Header Locations**
- **Icy Module Header Locations**
- **Mice Module Header Locations**
- **Examine a Typical Header**

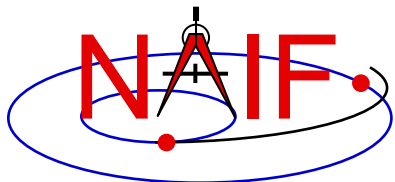
* “Module” = API, routine, subroutine, procedure, function



Module Header Purpose

Navigation and Ancillary Information Facility

- **NAIF uses module “headers” to provide detailed information describing how to use the module**
 - In FORTRAN, C and MATLAB Toolkits the “headers” are comment blocks inserted in the source code
 - In IDL Toolkits, where there are (currently) no source code files, the “headers” exist as independent files
- **All Toolkit distributions include hyperlinked HTML versions of the module headers.**
 - All but ICY also include plain text versions
- **The next charts provide the header contents and locations**



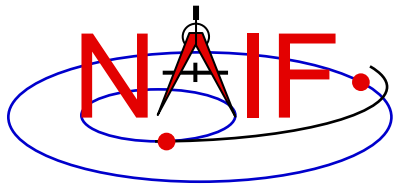
Module Header Contents

Navigation and Ancillary Information Facility

- **Procedure or subroutine name**
- **Brief abstract**
- **Disclaimer (legalese required for JPL code)**
- **Required Reading (names of any related SPICE technical reference documents)**
- **Keywords (single relevant words; not really used)**
- **Argument type declarations, or Include files (for C and Fortran toolkits)**
- **Brief Input and Output descriptions**
- **Detailed Input descriptions**
- **Detailed Output descriptions**
- **Parameter definitions, if any**
- **Exceptions (what happens if a problem is detected)**
- **Descriptions of any files used**
- **Particulars (details about what the module does, how it works, any limitations)**
- **Code usage example(s)**
- **Restrictions in usage of the module**
- **Literature references**
- **Author**
- **Version**
- **Index entries (brief phrases used to generate entries for the Permuted Index document)**
- **Revision history (only in Fortran headers)**

The source code goes here!

ICY and MICE headers contain only the items shown in blue; see the corresponding CSPICE header for full details.



Fortran Module Header Locations

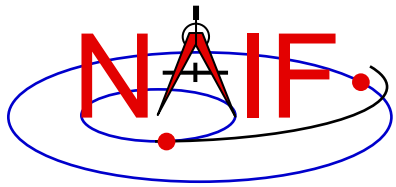
Navigation and Ancillary Information Facility

- **Plain text versions:**

- **<path to SPICELIB>/toolkit/src/spicelib/<name.f> or <name>.for**
- **In most cases there is a single “header” at the top of the source code. For cases where a FORTRAN module has multiple entry points, there are additional “headers” at each entry point. For example:**
 - » **“keeper.f” has entries for:**
 - **FURNISH, KTOTAL, KINFO, KDATA, KCLEAR, and UNLOAD**

- **HTML versions:**

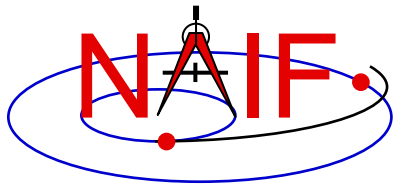
- **<path to SPICELIB>/toolkit/doc/html/spicelib/index.html**



C Module Header Locations

Navigation and Ancillary Information Facility

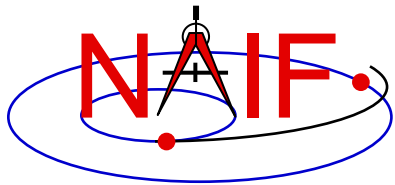
- **Plain text versions:**
 - **<path to CSPICE>/cspice/src/cspice/<name>_c.c**
- **HTML versions:**
 - **<path to CSPICE>/cspice/doc/html/cspice/index.html**



IDL Module Header Locations

Navigation and Ancillary Information Facility

- **Two sets of headers are provided**
 - Icy headers in HTML format:
 - » `<path to icy>/icy/doc/html/icy/index.html`
 - CSPICE headers, in text and HTML formats:
 - » `<path to icy>/icy/src/cspice/<name>_c.c`
 - » `<path to icy>/icy/doc/html/cspice/index.html`
- **The information provided in an “Icy” header is minimal in some cases; the corresponding CSPICE header provides more detail**
 - A link to the corresponding CSPICE header is provided in the Icy header

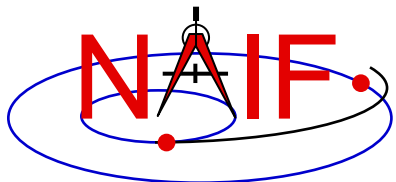


Matlab Module Header Locations

Navigation and Ancillary Information Facility

- **Two sets of headers are provided**
 - Mice headers in HTML format:
 - » [<path to Mice>/mice/doc/html/mice/index.html](#)
 - » Also available using the Matlab `help` command, e.g.:

```
>> help cspice_str2et
```
 - CSPICE headers, in text and HTML formats:
 - » [<path to Mice>/mice/src/cspice/<name>_c.c](#)
 - » [<path to Mice>/mice/doc/html/cspice/index.html](#)
- **The information provided in a “Mice” header is minimal in some cases; the corresponding CSPICE header provides more detail**
 - A link to the corresponding CSPICE header is provided in the Mice header



Examine a Typical Header

Navigation and Ancillary Information Facility

- As example, look for and examine the headers for the modules named `spkezt` and `str2et`

FORTRAN	C	IDL (lcy)	MATLAB (Mice)
SPKEZR	<code>spkezt_c</code>	<code>cspice_spkezt</code>	<code>cspice_spkezt</code>
STR2ET	<code>str2et_c</code>	<code>cspice_str2et</code>	<code>cspice_str2et</code>

`spkezt` is the principal ephemeris access module
`str2et` is a key time conversion module