

## Determining the Effective Time of the JIRAM Field-of-View

The JIRAM instrument has a despining mirror which compensates for the spin of the Juno spacecraft, up to a maximum of 1.1 seconds of spacecraft rotation. Without this mirror, the spin of the spacecraft would smear JIRAM images and completely carry a scene out of the instrument field of view at the nominal 2 rpm spin rate of Juno for longer exposure durations. The despining mirror, therefore, effectively “freezes” the scene and establishes an effective image time. A user needs to know this effective image time in order to accurately recreate JIRAM pointing. **The time provided in the JIRAM label files that corresponds to this frozen scene is contained in the SPACECRAFT\_CLOCK\_START\_COUNT field.** The calendar time in the label is translated from the SCLK time, so SCLK is more “native” and reliable.

### Use of SCLK

Currently, in the JIRAM data label files, the SCLK partition is incorrect. For example, the JIRAM data product JIR\_IMG\_EDR\_2018355T090424\_V01 has a SCLK start time of

```
SPACECRAFT_CLOCK_START_COUNT = "1/598655328:25624"
```

The leading ‘1’, the SCLK partition is wrong. **It should be 5.**

If one tries to convert the above directly to a calendar time with SPICE, the following is the result:

```
IDL> cspice_scs2e, -61999, '1/598655328:25624', et
% CSPICE_SCS2E: SPICE(NOTINPART): [scs2e_c->SCS2E->SCENCD] SCLK count
1/598655328:25624 does not fall in the boundaries of partition number 1.
```

indicating that the partition is a problem. But if that ‘1’ is replaced with a ‘5’, one gets exactly the calendar start time in the label, 2018-12-21T09:04:20.176.

```
IDL> cspice_scs2e, -61999, '5/598655328:25624', et
IDL> cspice_et2utc, et, 'ISOC', 3, time
IDL> print, time
2018-12-21T09:04:20.176
```

**Alternatively, users can choose to omit the ‘1’.**

Users should also note that JIRAM data incorporates “high precision” SCLK time, as indicated by the five significant digits in the tick portion of the SCLK time. As described in the header of the Juno SCLK kernels and as shown above, the clock ID that corresponds to this “high precision” clock is -61999; this the clock ID that must be used when doing time conversions with this SCLK format for Juno data.