



14048 - Exploring the Dust-Gas Connection in the Protoplanetary Disk of GM Aur

Cycle: 22, Proposal Category: GO

(Availability Mode: SUPPORTED)

INVESTIGATORS

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VISITS

| <i>Visit</i> | <i>Targets used in Visit</i> | <i>Configurations used in Visit</i> | <i>Orbits Used</i> | <i>Last Orbit Planner Run</i> | <i>OP Current with Visit?</i> |
|--------------|------------------------------|--|--------------------|-------------------------------|-------------------------------|
| 01 | (1) V-GM-AUR CCDFLAT | STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA | 2 | 31-Jan-2015 21:05:41.0 | yes |
| 02 | (1) V-GM-AUR CCDFLAT | STIS/CCD STIS/FUV-MAMA STIS/NUV-MAMA | 2 | 31-Jan-2015 21:05:44.0 | yes |

4 Total Orbits Used

ABSTRACT

Previous Spitzer infrared observations of disks around young, low-mass pre-main sequence stars have given us an unprecedented look at dust evolution in young objects, particularly in disks which were revealed to have large inner holes (i.e., the transitional disks). Despite this groundbreaking progress in studying the dust in young disks, the relationship between the dust and gas properties in the inner disk remains essentially unknown. Here we propose to quantify the variability of both the dust and gas in the transitional disk surrounding GM Aur to study how or if

accretion onto the star is tied to inhomogeneities in the inner disk. To do this, we will use simultaneous Spitzer, HST, and Swift observations to constrain the IR, UV, and Xray emission of GM Aur and provide a picture of the interaction between dust and gas in the inner ~ 0.5 -1 AU of the disk down to the stellar surface.

OBSERVING DESCRIPTION

There will be 2 visits of the target GM Aur. The visits will be separated by approximately 1 week. MAMA FUV and NUV observations will be done using the G140L and G230L gratings which cover 1150-1730 A and 1570-3180 A. Simultaneous optical and near-IR spectra will be taken using the CCD G430L grating (2900-5700 A) and the CCD G750L grating (5240-10270 A). We will also do fringe-flats to correct the spectra beyond 7000 A. We note that since this is a variability study we will need to use the STIS MAMA and the CCD in the same visit and since the CCD observations will take about 30 minutes, this visit structure is allowed according to the HST primer.

----- Additional Comments -----

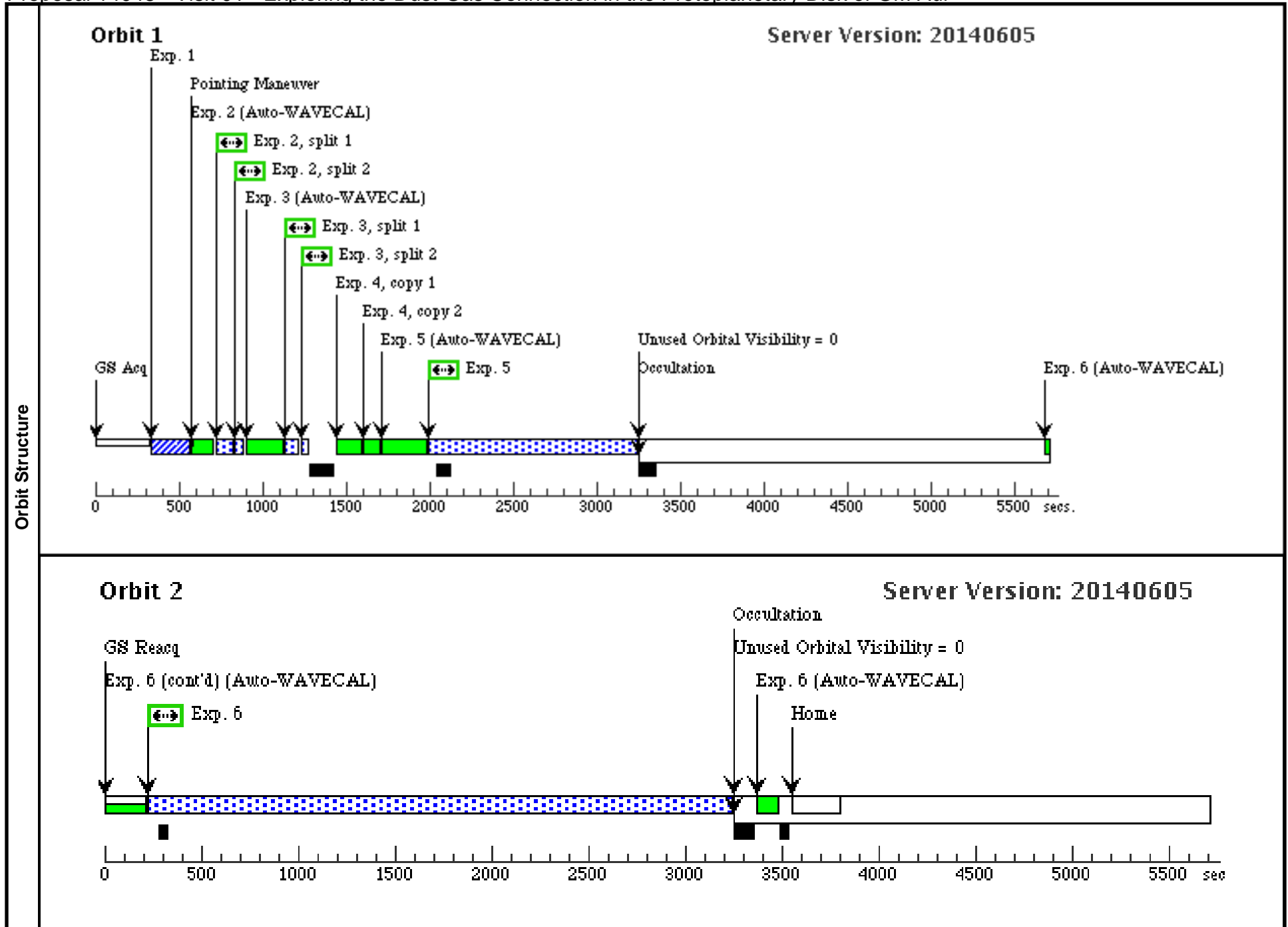
These visits will be simultaneous to Spitzer observations of GM Aur. Spitzer and HST visibility windows overlap between January 5 and January 10, 2016. We request that GM Aur be observed at the beginning of the window (January 5) for visit 1 and the end of this window (January 10) for visit 2 to allow for the greatest time span between the two epochs. This request has been specified using the timing requirements for each epoch.

GM Aur is flagged as a health/safety concern by the BOT for the NUV G230L exposure. GM Aur has been observed with the G230L grating on 5 separate occasions and has not exceeded the brightness limit. We know the spectral type of GM Aur is $\sim K4$ - $K5$, not O5 as assumed by the BOT.

Proposal 14048 - Visit 01 - Exploring the Dust-Gas Connection in the Protoplanetary Disk of GM Aur

Sun Feb 01 02:05:45 GMT 2015

| Fixed Targets | Fixed Targets | | | | | Exposures | | | | | | | | | | |
|---------------|--|-----------------------|--|--------------------------|------------|-----------------------|---|-----------------|--------|----------------------|---------------|--------------|----------------|-----------------------|---------------------------------|-------|
| | # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous | # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
| | Proposal 14048, Visit 01 Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: BETWEEN 05-JAN-2016:00:00:00 AND 06-JAN-2016:00:00:00 Comments: This visit should be simultaneous with Spitzer observations. | | | | | | | | | | | | | | | |
| | (1) | V-GM-AUR | RA: 04 55 10.9800 (73.7957500d) Dec: +30 21 59.40 (30.36650d) Equinox: J2000 | | V=13.1 | Reference Frame: ICRS | | | | | | | | | | |
| | 1 | (1) V-GM-AUR | STIS/CCD, ACQ, F28X50LP | MIRROR | | | | | | | | | | 0.5 Secs (0.5 Secs) | | |
| | | | | | | | | | | | | | | [==>] | [1] | |
| | 2 | (1) V-GM-AUR | STIS/CCD, ACCUM, 52X2 | G430L 4300 A | CR-SPLIT=2 | | | | | | | | | 35 Secs (35 Secs) | | |
| | | | | | | | | | | | | | | [==>(Split 1)] | [1] | |
| | | | | | | | | | | | | | | [==>(Split 2)] | | |
| | 3 | (1) V-GM-AUR | STIS/CCD, ACCUM, 52X2 | G750L 7751 A | CR-SPLIT=2 | | | | | | | | | 8 Secs (8 Secs) | | |
| | | | | | | | | | | | | | [==>(Split 1)] | [1] | | |
| | | | | | | | | | | | | | [==>(Split 2)] | | | |
| | 4 | CCDFLAT | STIS/CCD, ACCUM, 0.3X0.09 | G750L 7751 A | | | | | | | | | | [==>(Copy 1)] | [1] | |
| | | | | | | | | | | | | | | [==>(Copy 2)] | | |
| | 5 | (657604) (1) V-GM-AUR | STIS/NUV-MAMA, ACCUM, 52X2 | G230L 2376 A | | | | | | | | | | 1207 Secs (1207 Secs) | | |
| | | | | | | | | | | | | | | [==>] | [1] | |
| | 6 | (657602) (1) V-GM-AUR | STIS/FUV-MAMA, ACCUM, 52X2 | G140L 1425 A | | | | | | | | | | 2967 Secs (2967 Secs) | | |
| | | | | | | | | | | | | | | [==>] | [2] | |



Proposal 14048 - Visit 02 - Exploring the Dust-Gas Connection in the Protoplanetary Disk of GM Aur

Sun Feb 01 02:05:45 GMT 2015

| Fixed Targets | Visit | | | | | | | | | |
|---------------|--|-----------------|--|----------------------------|-----------------|-----------------------|---------------|--------|---|-------|
| | # | Name | Target Coordinates | Targ. Coord. Corrections | Fluxes | Miscellaneous | | | | |
| | Proposal 14048, Visit 02 Diagnostic Status: No Diagnostics Scientific Instruments: STIS/CCD, STIS/FUV-MAMA, STIS/NUV-MAMA Special Requirements: BETWEEN 09-JAN-2016:00:00:00 AND 10-JAN-2016:00:00:00 Comments: This visit should be simultaneous with Spitzer observations. | | | | | | | | | |
| | (1) | V-GM-AUR | RA: 04 55 10.9800 (73.7957500d) Dec: +30 21 59.40 (30.36650d) Equinox: J2000 | | V=13.1 | Reference Frame: ICRS | | | | |
| Exposures | # | Label (ETC Run) | Target | Config,Mode,Aperture | Spectral Els. | Opt. Params. | Special Reqs. | Groups | Exp. Time (Total)/[Actual Dur.] | Orbit |
| | 1 | | (1) V-GM-AUR | STIS/CCD, ACQ, F28X50LP | MIRROR | | | | 0.5 Secs (0.5 Secs) [==>] | [1] |
| | 2 | | (1) V-GM-AUR | STIS/CCD, ACCUM, 52X2 | G430L 4300 A | | CR-SPLIT=2 | | 35 Secs (35 Secs) [==>(Split 1)] [==>(Split 2)] | [1] |
| | 3 | | (1) V-GM-AUR | STIS/CCD, ACCUM, 52X2 | G750L 7751 A | | CR-SPLIT=2 | | 8 Secs (8 Secs) [==>(Split 1)] [==>(Split 2)] | [1] |
| | 4 | | CCDFLAT | STIS/CCD, ACCUM, 0.3X0.09 | G750L 7751 A | | | | [==>(Copy 1)] [==>(Copy 2)] | [1] |
| | 5 | (657604) | (1) V-GM-AUR | STIS/NUV-MAMA, ACCUM, 52X2 | G230L 2376 A | | | | 1231 Secs (1207 Secs) [==>1207.0 Secs] | [1] |
| | 6 | (657602) | (1) V-GM-AUR | STIS/FUV-MAMA, ACCUM, 52X2 | G140L 1425 A | | | | 2967 Secs (2967 Secs) [==>] | [2] |

