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COLLABORATIVE ASTEROID PHOTOMETRY FROM UAI: 2026 JANUARY-MARCH

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(Received: 2026 April 14)

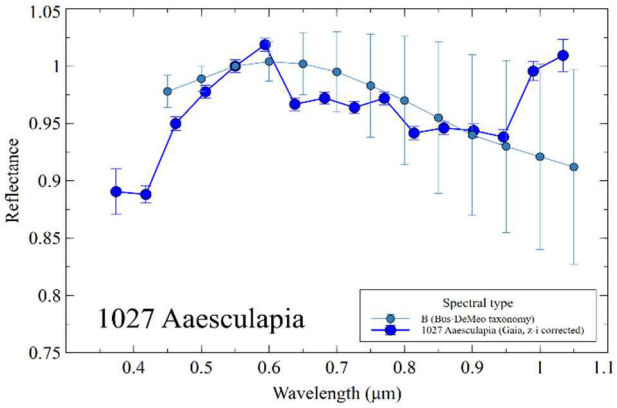
Photometric observations of six asteroids were collected to contribute to their physical characterization. Lightcurves were acquired for 1027 Aesculapia, 1584 Fuji, 1586 Thiele, 1737 Severny, 3763 Qianxuesen, and 2026 GD.

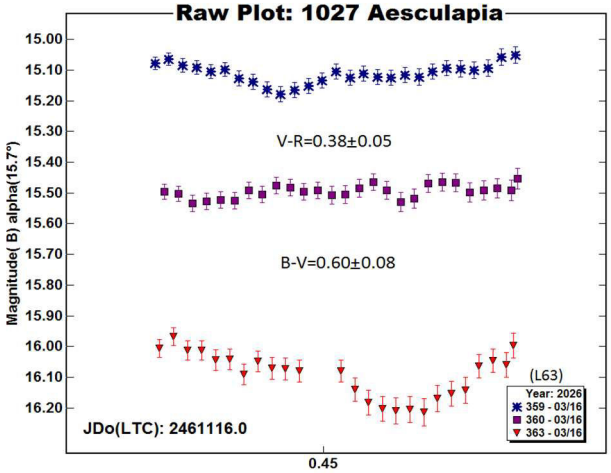
Collaborative asteroid photometry was conducted within the Italian Amateur Astronomers Union (UAI, 2026) to determine or refine some of the physical characteristics of the chosen asteroids. Table I shows the observing circumstances and results.

The CCD/CMOS observations were made in 2026 January-March using the instrumentation described in Table II. Lightcurve analysis was done with *MPO Canopus* (Warner, 2023) by UAI members M. Iozzi and R. Papini. All images were calibrated with dark and flat frames and converted to standard magnitudes using solar colored field stars from versions of the CMC15 and ATLAS catalogues distributed with *MPO Canopus*.

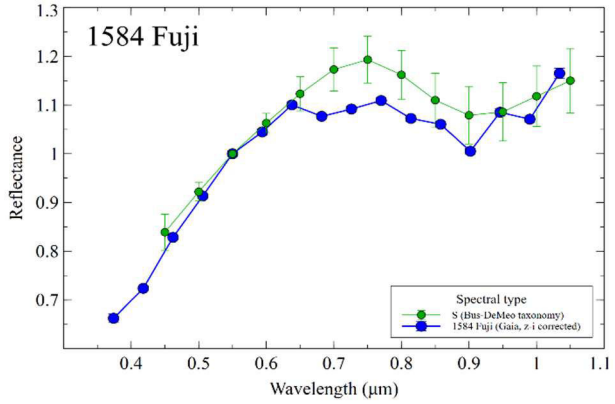
1027 Aesculapia is a low to medium albedo outer main-belt asteroid. The reflectance spectrum for this asteroid, retrieved from the Gaia ESA Archive (2025) and corrected for the z-i parameter (Franco, 2025), is consistent with a B-type classification within the Bus-DeMeo taxonomy (DeMeo et al., 2009) and agrees with the taxonomic attribution by Franco (2025).

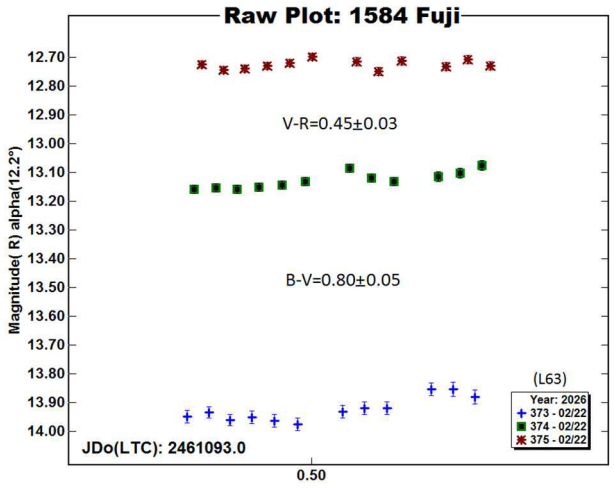
Multiband photometry was acquired by M. Iozzi (L63) on 2026 March 16, from which we found a color index B-V = 0.60 ± 0.08 and V-R = 0.38 ± 0.04. These color indices are consistent to a B-type asteroid, characterized by a slight blueward slope, compared to C-type (Shevchenko and Lupishko, 1998; B-V = 0.69 ± 0.03; V-R = 0.38 ± 0.05).





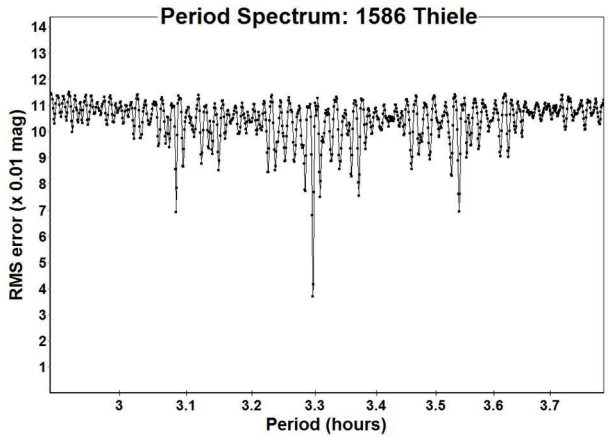
1584 Fuji is an inner main-belt asteroid classified as an S-type in the Tholen taxonomy (Tholen, 1984). The reflectance spectrum of 1584 Fuji, retrieved from the Gaia ESA Archive (2025) and corrected for the z-i parameter (Franco, 2025), is consistent with an S-type classification within the Bus-DeMeo taxonomy (DeMeo et al., 2009). This result also aligns with the previous attributions by Tholen (1984) and Franco (2025).

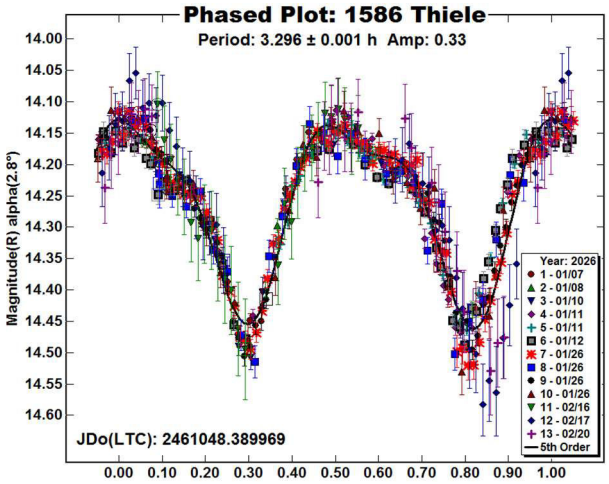




Multiband photometry was acquired by M. Iozzi (L63) on 2026 February 22, from which we found a color index B-V= 0.80 ± 0.05 and V-R = 0.45 ± 0.03. While the V-R color index is consistent with an S-type classification (Shevchenko and Lupishko, 1998; 0.49 ± 0.05), the B-V index appears slightly bluer than expected for this taxonomy (Shevchenko and Lupishko, 1998; 0.86 ± 0.04).

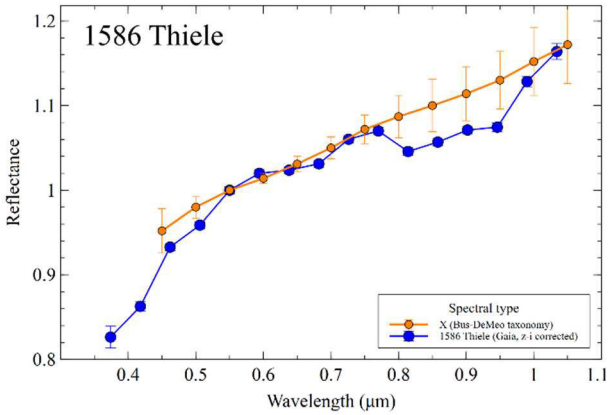
1586 Thiele is a medium albedo inner main-belt asteroid. Collaborative observations were made over thirteen nights. The period spectrum shows a deeper minimum with a bimodal solution of P = 3.296 ± 0.001 h and amplitude A = 0.33 ± 0.03 mag. This solution differs from the previous solution found by Childers and Church (2007; 3.086 ± 0.038 h).





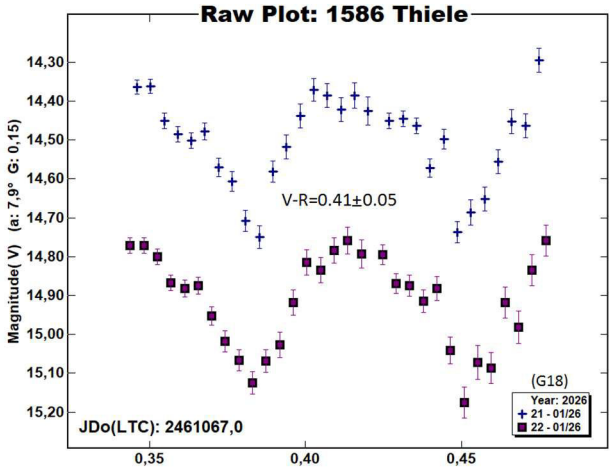
The reflectance spectrum for 1586 Thiele, retrieved from the Gaia ESA Archive (2025) and corrected for the z-i parameter (Franco, 2025), is consistent with a X-type classification within the Bus-DeMeo taxonomy (DeMeo et al., 2009) and agrees with the taxonomic attribution by Franco (2025).

Multiband photometry was acquired by A. Valvasori (G18) on 2026 January 26, from which we found a color index V-R = 0.41 ± 0.05, consistent with a M-type asteroid (Shevchenko and Lupishko, 1998; 0.42 ± 0.04).

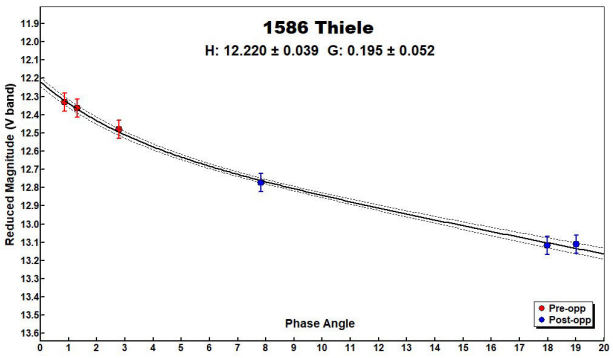


Number	Name	2026 mm/dd	Phase	L_{PAB}	B_{PAB}	Period(h)	P.E.	Amp	A.E.	Grp
1027	Aesculapia	03/16	15.7	135	1					MB-O
1584	Fuji	02/22	12.1	146	-17					MB-I
1586	Thiele	01/07-02/20	*2.7-19	113	-1	3.296	0.001	0.30	0.03	MB-I
1737	Severny	03/23	7.8	164	-4					MB-O
3763	Qiuanxuesen	03/13-03/28	*3.4-8.4	175	5	3.886	0.001	0.19	0.06	MB-I
	2026 GD	04/08	3.6	197	-2	0.0273	0.0001	0.59	0.18	NEA

Table I. Observing circumstances and results. The first line gives the results for the primary of a binary system. The second line gives the orbital period of the satellite and the maximum attenuation. The phase angle is given for the first and last date. If preceded by an asterisk, the phase angle reached an extrema during the period. L_{PAB} and B_{PAB} are the approximate phase angle bisector longitude/latitude at mid-date range (see Harris et al., 1984). Grp is the asteroid family/group (Warner et al., 2009).

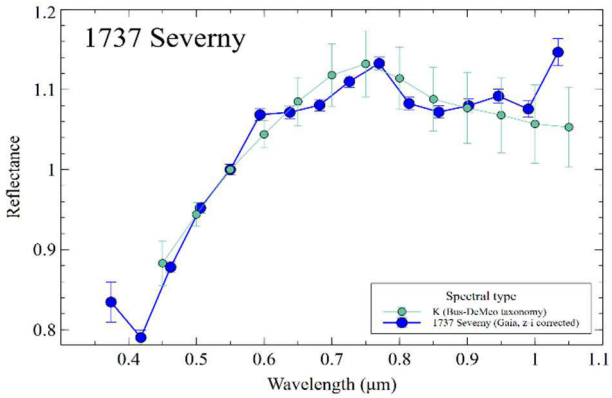


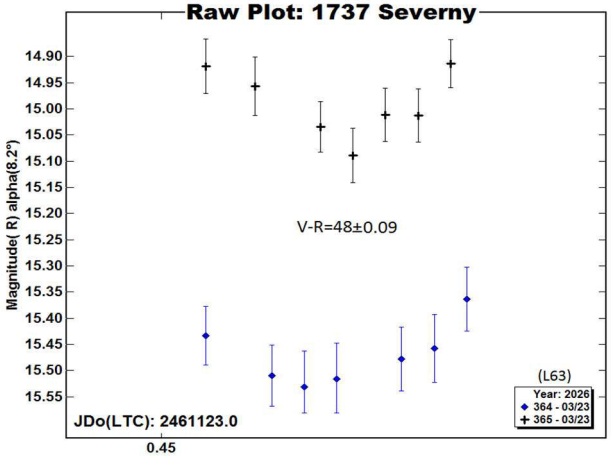
The wide phase angle covered by the observations allowed us to determine the H-G parameters. For each lightcurve, the R-band magnitude was derived using the half peak-to-peak amplitude and converted to the V-band by adding the V-R color index. We found $H = 12.22 \pm 0.04$ and $G = 0.20 \pm 0.05$; the G value is consistent with an M-type asteroid (Shevchenko and Lupishko, 1998; 0.20 ± 0.02).



1737 Severny is a medium albedo outer main-belt asteroid. The reflectance spectrum for 1737 Severny, retrieved from the Gaia ESA Archive (2025) and corrected for the z-i parameter (Franco, 2025), is consistent with a K-type classification within the Bus-DeMeo taxonomy (DeMeo et al., 2009) and agrees with the taxonomic attribution by Franco (2025).

Multiband photometry was acquired by M. Iozzi (L63) on 2026 March 23, from which we found a color index V-R = 0.48 ± 0.09, close to an S-Type asteroid (Shevchenko and Lupishko, 1998; 0.49 ± 0.05).

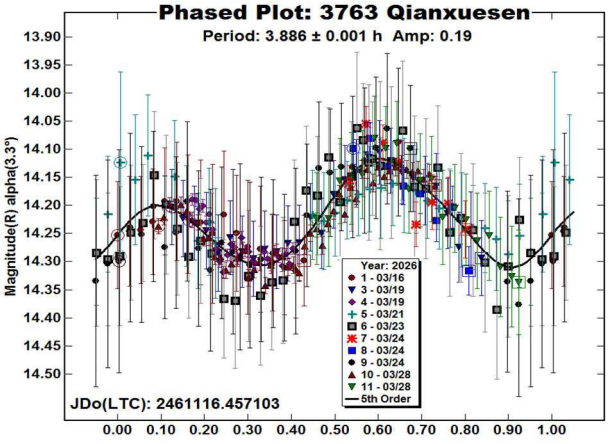




3763 Qianxuesen is a medium-high albedo inner main-belt asteroid. Collaborative observations were made over eleven nights. We found a bimodal solution with a synodic period of $P = 3.886 \pm 0.001$ h and amplitude $A = 0.19 \pm 0.06$ mag. The period is close to the previously published results in the lightcurve database (Warner et al., 2009).

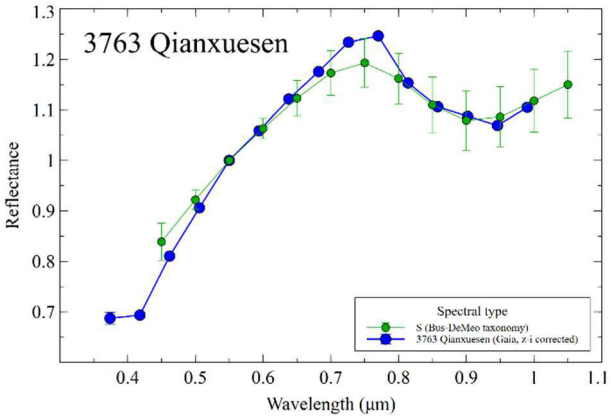
Observatory (MPC code)	Telescope	CCD/CMOS	Filters	Observed Asteroids (#Sessions)
Castelmartini (160)	0.25-m SCT f/6.3	ZWO ASI2600MM PRO	C	1584(4), 3763 (7)
HOB Astronomical Observatory (L63)	0.20-m SCT f/6.0	ATIK 383L+ (bin 2×2)	V,Rc	1027(1), 1584(1), 1737(1), 3763(1)
ALMO Observatory (G18)	0.30-m NRT f/4.0	ZWO ASI533MM PRO (bin 2×2)	V,Rc	1586(1), 1584(1), 3763(1)
Astronomical Observatory, University of Siena (K54)	0.30-m MCT f/5.6	SBIG STL-6303e (bin 2×2)	C	1586(3)
Iota Scorpii(K78)	0.40-m RCT f/6.1	Player One 455M Pro (bin 4×4)	Rc	1586(3)
GAMP (104)	0.60-m NRT f/4	Apogee Alta	Rc	2026 GD(1)
Ossevatorio astronomico L.Zannoni Monte Viseggi (126)	0.40-m RCT f6.5	ZWO ASI6200MM	Rc	3763(1)
GiaGa Observatory (203)	0.36-m SCT f/5.8	Moravian G2-3200	C	1586(1)
Zen observatory (M26)	0.30-m RCT f/7.4	Atik 383L+	Rc	3763(1)

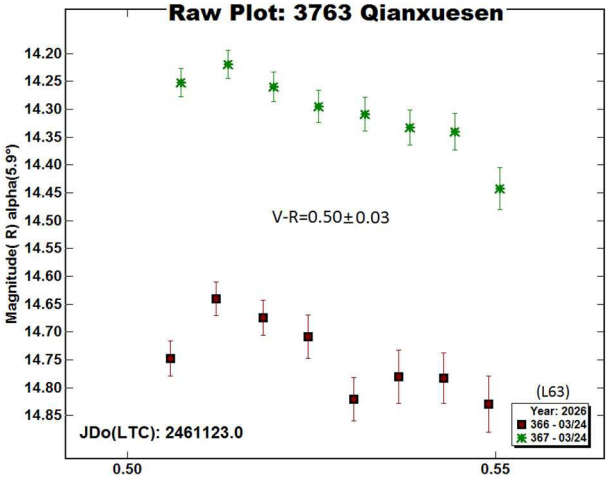
Table II. Instrumentation. NRT: Newtonian Reflector, MCT: Maksutov-Cassegrain, RCT: Ritchey-Chretien, SCT: Schmidt-Cassegrain.



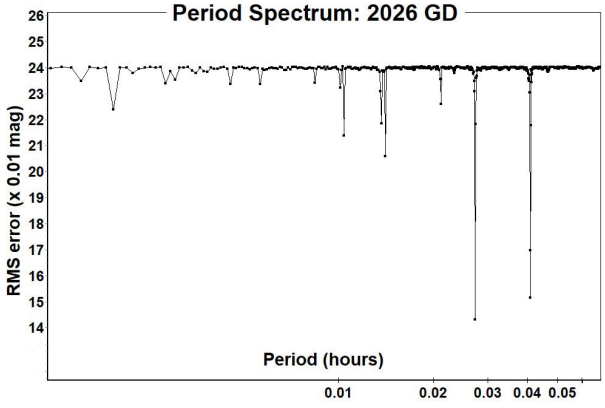
The reflectance spectrum for 3763 Qianxuesen, retrieved from the Gaia ESA Archive (2025) and corrected for the z-i parameter (Franco, 2025), is consistent with an S-type classification within the Bus-DeMeo taxonomy (DeMeo et al., 2009) and agrees with the taxonomic attribution by Franco (2025).

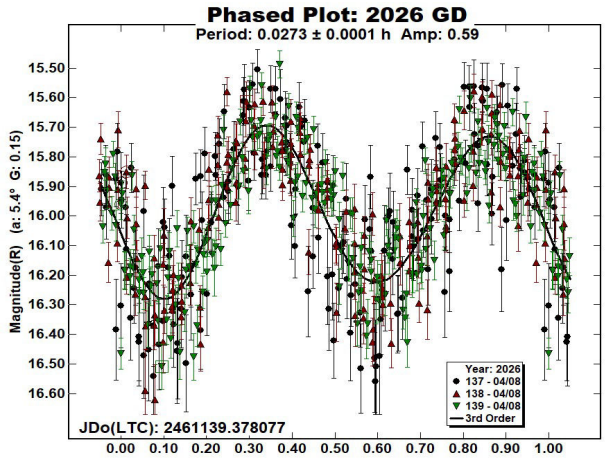
Multiband photometry was acquired by M. Iozzi (L63) on 2026 March 24, from which we found a mean color index V-R = 0.50 ± 0.03, which is consistent with an S-type asteroid (Shevchenko and Lupishko, 1998; 0.49 ± 0.05).





2026 GD is an Apollo Near-Earth asteroid discovered by Pan-STARRS 1, Haleakala, on 2026 February 2, with H = 26.63 and a Minimum Orbit Intersection Distance (MOID) from Earth of 0.00052 au.





Photometric observations were made by P. Bacci and M. Maestripieri (104) over a 142-minute session beginning at 21:04 UT on 8 April 2026. A synodic rotation period of $P = 0.0273 \pm 0.001$ h (1.64 minutes) was determined; the lightcurve amplitude was $A = 0.59 \pm 0.18$ mag. From this, we derived a lower limit for the triaxial ellipsoid axis ratio of $(a/b) = 10^{(0.4A)} = 1.7$.

Acknowledgements

We wish to honor the memory of our colleague and friend Giorgio Baj and express our gratitude for his significant contributions to the UAI amateur astronomers' asteroids section. His dedicated work in astrometric and photometric observations leaves a lasting legacy. He will be deeply missed.

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LIGHTCURVE ANALYSIS FOR ONE MARS-CROSSER AND SIX MAIN-BELT ASTEROIDS

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(Received: 2026 April 11)

Photometric observations for one Mars-crosser and six main-belt asteroids. We derived the following rotational synodic periods: 6414 Mizunuma, 7.307 ± 0.004 h; 9768 Stephenmaran, 4.0833 ± 0.0019 h; 10416 Kottler, 41.73 ± 0.02 h; 18818 Yasuhico, 3.4997 ± 0.0008 h; (18067) 2000 AB98, 9.573 ± 0.006 h; (19616) 1999 OS3: 3.4146± 0.0005 h; (70171) 1999 OL2, 3.4385 ± 0.0045 h.

We report on the photometric analysis for eight asteroids performed by the Asociación Valenciana de Astronomía (AVA). The data were obtained during the first quarter of 2026. We present graphic results of data analysis, mainly lightcurves, with the plot phased to a given period. We managed to obtain several complete lightcurves and calculated their rotation periods as accurately as possible.

Observatory	Telescope (meters)	CCD
C.A.A.T. J57	17" DK	QHY- 600
C.A.A.T. J57	10" NW	ZWO ASI 1600
Z93	SC 8"	SBIG ST8300
Y78	NW 300 f4	ZWO ASI 294 MM PRO
Y76	SC 9,25"	ATIK 314L+

Table I. List of instruments used for the observations.

We focused on asteroids with no reported period and those where the reported period was poorly established and needed confirmation. The targets were selected from the Collaborative Asteroid Lightcurve (CALL) website (*http://www.minorplanet.info/call.html),* the Minor Planet Center (*http://www.minorplanet.net*). The Asteroid Lightcurve Database (LCDB; Warner et al., 2009) was consulted to locate previously published results.

Work Methods and Results

Images were measured using *MPO Canopus V12* (Bdw. Publishing) with a differential photometry technique. *MPO Canopus* using the Fourier algorithm developed by Harris (Harris et al., 1989). The comparison stars were restricted to near solar-color to minimize