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Orbital elements of double stars: ADS 4376, 12540 and 14783

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Marco Scardia, Jean-Louis Prieur, Luigi Pansecchi, Robert W. Argyle. Orbital elements of double stars: ADS 4376, 12540 and 14783. Information circular - IAU Commission 26. Double stars, 2007, 162, pp.1. hal-00340023

HAL Id: hal-00340023

<https://hal.science/hal-00340023>

Submitted on 23 Nov 2019

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INTERNATIONAL ASTRONOMICAL UNION COMMISSION 26

(DOUBLE STARS)

INFORMATION CIRCULAR No. 162 (JUNE 2007)

NEW ORBITS

ADS α 2000 δ	Name n	P a	T i	e ω	Ω (2000) Last ob.	2007 2008	Author(s)
195 00152+2722	J 868 0.3305	1089 ^y 17 8"477	1725.11 75°2	0.367 352°8	68°9 2006.9575	228°1 5"780 228.3 5.817	NOVAKOVIC
287 00209+1059	BU 1093 0.7643	471. 0.545	1844.26 42.4	0.517 181.6	132.3 2005.029	117.2 0.747 117.4 0.750	LING
822 00596-0111	A 1903 2.8031	128.43 0.359	1956.53 34.7	0.154 90.1	137.3 1999.8175	13.4 0.351 15.8 0.350	DOCOBO & LING
- 01345+7804	HDS 211 15.8311	22.74 0.207	1996.99 127.7	0.462 28.5	68.8 2006.9412	236.6 0.289 232.1 0.283	DOCOBO et al. (*)
1780 02202+2949	A 961 2.5159	143.09 0.294	2038.10 145.4	0.571 15.6	150.0 2003.9517	279.0 0.308 277.4 0.301	NOVAKOVIC
- 04258+1800	COU 2682 9.8093	36.70 0.270	1995.20 60.1	0.017 54.4	159.1 2000.873	335.0 0.270 339.9 0.2732	DOCOBO & TAMAZIAN
4376 05491+6248	STF 3115 0.2628	1370.0 1.585	2106.0 144.0	0.633 201.6	89.1 2007.195	340.2 0.814 339.6 0.811	SCARDIA et al. (**)
5212 06345-1114	HO 234 0.9424	382.0 0.69	1915.26 54.4	0.345 183.2	36.2 2003.9604	358.7 0.575 359.5 0.581	RICA
5841 07106+1543	J 703 0.2647	1360.20 12.699	3235.39 113.4	0.850 177.1	96.2 2006.9583	113.7 9.384 113.6 9.446	CVETKOVIC
- 08033+5251	HDS 1149 15.8451	22.72 0.282	2009.24 124.4	0.115 252.3	21.8 2006.9447	185.0 0.237 170.1 0.200	DOCOBO et al. (*)
10049 16256-2327	H 2 19 AB 0.1502	2397.54 4.250	2326.84 135.3	0.675 226.1	77.5 2001.5260	338.8 2.918 338.7 2.913	NOVAKOVIC

NEW ORBITS (continuation)

ADS α2000δ	Name n	P a	T i	e ω	Ω(2000) Last ob.	2007 2008	Author(s)
12540 19307+2758	MCA 55 Aac 1.6834	213.86 0.536	1998.00 154.9	0.256 39.4	170.4 2005.820	107.1 0.376 104.1 0.376	SCARDIA et al. (**)
- 19535+2405	DJU 4 0.5851	615.26 1.555	2027.82 85.9	0.079 169.7	68.1 2003.000	246.3 1.307 246.3 1.314	CVETKOVIC
- 20151+3742	COU 2416 6.8886	52.26 0.211	1995.83 36.9	0.432 255.7	89.4 2005.5183	106.5 0.223 110.8 0.230	DOCOBO & LING
14783 21137+6424	H 1 48 4.4060	81.71 0.690	2003.54 83.7	0.805 45.2	62.0 2005.886	239.2 0.313 240.3 0.393	SCARDIA et al. (**)
- 22083+2409	HDS 3145 33.3056	10.81 0.094	1997.67 151.8	0.488 311.3	71.2 2006.6897	229.2 0.081 169.9 0.048	DOCOBO et al. (*)
- 23334+4251	HDS 3356 18.8088	19.14 0.256	2005.49 75.5	0.587 80.3	144.0 2006.9464	322.3 0.172 328.7 0.220	DOCOBO et al. (*)
- 23506-5142	SLR 14 3.0273	118.9 0.814	1977.61 156.2	0.275 202.6	45.1 2001.8701	80.8 0.842 78.4 0.855	DOCOBO & LING

(*) DOCOBO, BALEGA & TAMAZIAN

(**) SCARDIA, PRIEUR, PANSECCHI & ARGYLE

NOTES

- OTHER PAPERS PUBLISHED IN 2006

- DOMMANGET, J.: *La Détermination du Pole d'une Orbite d'Etoile Double Visuelle*. Observations et Travaux, **62**, 5, 2006.
- DOMMANGET, J. & NYS, O.: *Erreurs relevées dans le Catalogue INDEX 1961,0 (Seconde série)*. Observations et Travaux, **64**, 21, 2006.

- ON THE POSSIBLE EXISTENCE OF A VERY LOW-MASS OBJECT IN THE TRIPLE STELLAR SYSTEM GLIESE 22 (HIP 2552).

Hierarchical triple system Gl 22 consists of three red dwarfs Aa, Ab and B. The orbital period of the inner orbit (pair Aa-Ab) is 15.64 yr, whereas that of the outer one (B relative to the mass center of Aa-Ab) is 223.4 yr. Both orbits are coplanar.

When determining the outer orbit, a weak sinusoidal pattern in the apparent motion of the component B has been noticed. It can be attributed to either a very unusual distribution of observational residuals or an unseen fourth body in the system. In the latter case, the star B would consist of the components Ba and Bb.

Under assumption of Bb to be a very low-mass object of $0.015M_{\odot}$ ($16M_J$) on a circular orbit around Ba with a period of ~ 15 yr, semimajor axis $0''35$ and coplanar with other two orbits, the observational residuals of the outer orbit are improved. In such case, the component Ba would be moving relative to the mass center of the virtual pair Ba-Bb on an orbit with a semimajor axis of $0''03$.

These motions are illustrated in the attached Fig. 1 on which blue line corresponds to the orbit of the Ba-Bb mass center relative to that of Aa-Ab and the red one shows the motion of the component Ba affected by the virtual component Bb. Similar to all visual, photographic and CCD observations, a single speckle measurement marked as “speckle (LC)” had initially been showing the position of B relative to the light center of Aa-Ab. For the orbits calculation, all such measurements have been reduced to the mass center of Aa-Ab.

J. A. Docobo, V. S. Tamazian, Y. Y. Balega, M. Andrade, D. Schertl, G. Weigelt and P. Campo

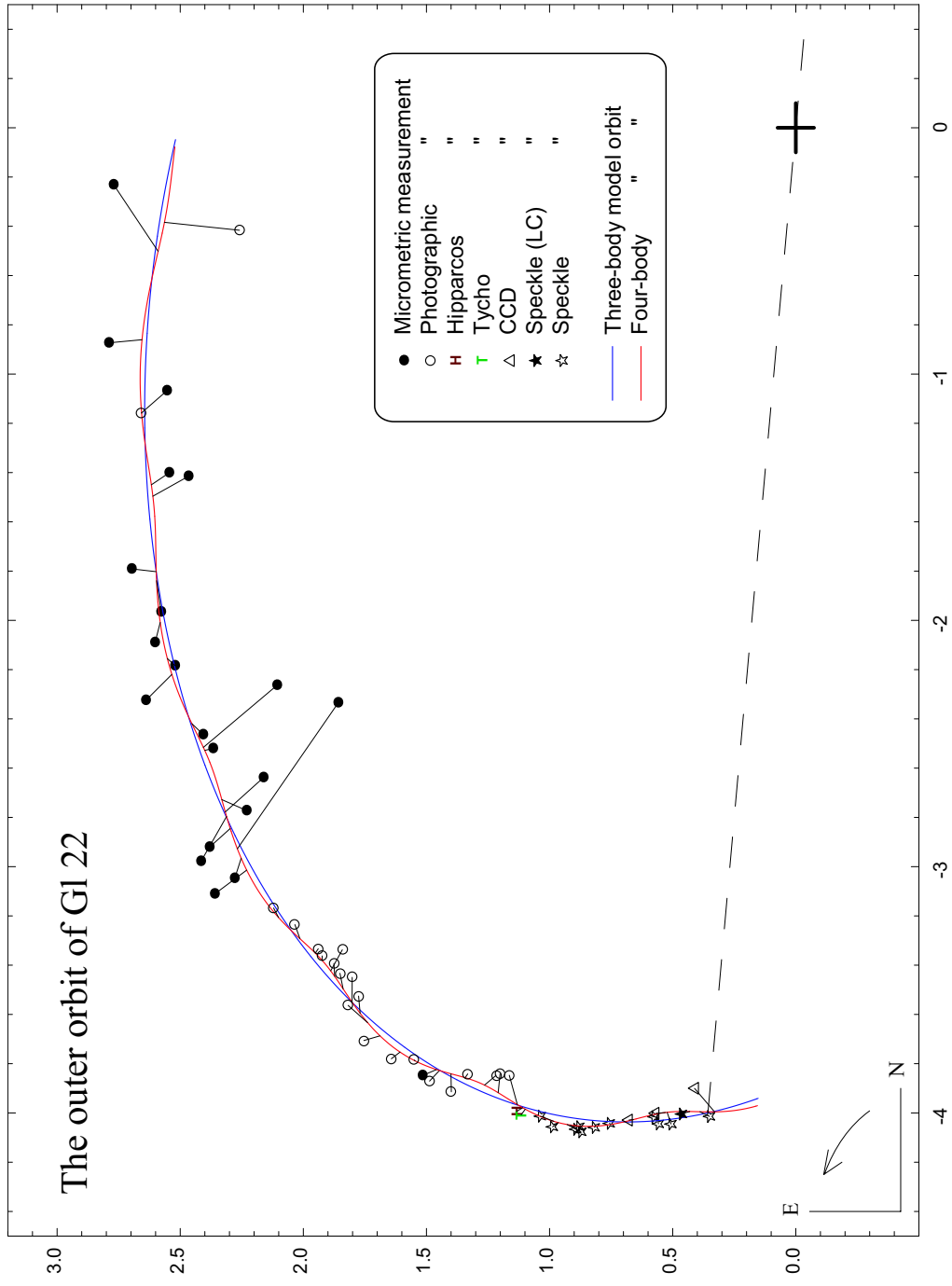


Figure 1

OMER NYS (1931-2007)

Born on 1 September 1931 at Tamise (Belgium), Omer NYS suddenly died at home in UCCLE (Brussels) on 20 January 2007, leaving behind him a lot of regrets and sadness.

He became a member of the Royal Observatory of Belgium on 1 April 1952 in the “assistant category” to the Scientific Staff and was directed to the Equatorial’s Department under the leadership of Dr Sylvain AREND. He brightly passed the foreseen examinations to “climb” its successive degrees.

His excellent basic formation permits to initiate him very early with the various computation methods in astrometry, particularly in visual double star astronomy. Omer was thus logically conducted to acquire good knowledge in celestial mechanics and to participate in orbit computations. He also was involved in various shared domains as the computation of stellar masses and dynamical parallaxes as well as of the relative radial velocities of the components of a binary. He actively contributed in our researches leading to the discovery of a particular spatial organization of the visual double stars orbital planes (J. Dommagnet, 2005).

His carrier has been exemplary as well by his desire to acquire some new competencies than by his steadiness in work. Having not been aware of such qualities of our collaborator, we would not have accepted the invitation made at a meeting at the Institut d’Astrophysique of Paris on april 15 1980, to collaborate in recording the available astrometric, photometric and spectroscopic data about the visual double stars needed to assure their correct observation by the HIPPARCOS satellite of the European Space Agency (ESA). This was a challenge, but it was with enthusiasm that we created the *Catalogue of the components of Double and Multiple stars - CCDM* (J. DOMMANGET & O. NYS, 1994), a more adapted version to the need of the mission, than the Index Catalogue of H. M. JEFFERS & W. H. van den BOS, managed at the time by our USNO colleague C. E. WORLEY (†).

This has probably been our most extended collaboration on a common subject. Seeing that the satellite had completed his mission and the results being published (ESA, 1997), Omer Nys finally - almost alone - pursued the completion of the CCDM beyond his retirement and to this sorrowed day of January 20, 2007.

Many other important activities should be mentioned, as for instance his important collaboration in the development by S. AREND of his own researches on the *Orthogonal Polynomia*.

Omer was an upright, guarded and pleasant colleague.

All our sympathy goes to his wife and his family.

J. Dommagnet

The deadline for contributions to Information Circular No. 163 is:

October 15th 2007

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ISSN: 1024-7769