Two New Probable Proper Motion Pairs

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Abstract: Two pairs of stars, observed at the Little Tycho Observatory, have been investigated using Gaia DR2 data, and found to be probable common proper motion pairs. They are currently not listed in the Washington Double Star Catalog.

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These two pairs were chosen as the direction of the proper motions of each component were within a degree of one another given the reported errors in the proper motion as reported by the two catalogs.

The data for each pair are taken from the UCAC5 and Gaia DR2 Source catalogs, as rendered by the Aladin tool:

The UCAC5 data are given in Table 1. The Gaia DR2 source data are given in Table 2.

Column explanation:

RA, Dec: The J2000 position of the primary.

UCAC5/Gaia DR2 PM RA, Dec A & B: The proper motions of both the primary and secondary stars, in mas/yr.

UCAC5/Gaia DR2 PM RA, Dec err A & B: The errors in proper motion of both the primary and secondary stars, in mas/yr.

Position angle: The position angle (theta) of the pair, in degrees, as measured by the Aladin "dist" tool.

Sep: The separation of the pair (rho), in arc seconds, again as measured by the Aladin "dist" tool.

Note: The Gaia DR2 Source proper motions of the A component were not given in the Aladin data readout for the star. The Gaia DR2 proper motions are based on Gaia observations, and if no suitable observations of a given star were made, the results were not published. See https://www.aanda.org/articles/aa/pdf/forth/aa32727-18.pdf for more details.

These two pairs were chance discoveries made visually at the Little Tycho Observatory. It is to be expected that in the future discoveries like this will be made by computer searches of ever more accurate and extensive surveys such as that recently released by the ESA Gaia team.

Table 1

	RA	Dec	UCAC5 G mag A	UCAC5 PM RA A	UCAC5PM RA err A	UCAC5 PM Dec A	UCAC5PM Dec err A	UCAC5 G mag B	UCAC5 PM RA B	UCAC5PM RA err B	UCAC5 PM Dec B	UCAC5 PM Dec err B	Position Angle	Sep
1	15:32:44.64	12:44:27.5	9.397	-41.6	1.3	-16.1	1.3	9.98	-37.2	1.1	-13.3	1.0	183.3	10.24
2	14:28:43.44	33:03:54.1	9.997	-5.5	1.2	-14.2	1.2	11.070	-7.3	1.2	-17.2	1.2	317.3	49.35

Table 2.

	RA	Dec	GaiaDR2 G mag A	GaiaDR2 PM RA A	GaiaDR2 PM RA err A	Gaia DR2 PM Dec A	Gaia DR2 PM Dec err A	Gaia DR2 G mag B	Gaia DR2 PM RA B	Gaia DR2 PM RA err B	Gaia DR2 PM Dec B	Gaia DR2 PM Dec err B	PA	Sep
1	15:32:44.59	12:44:27.2	9.5069	--	--	--	--	10.0598	-34.170	0.078	-13.853	0.114	180.0	10.02
2	14:28:43.44	33:03:54.1	10.0895	-4.993	0.023	-14.357	0.048	11.1010	-7.605	0.024	-17.594	0.049	317.4	49.51

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