PS1 AstrometryCorrection table fields

The starting point for the PS1 data archive is at Pan-STARRS1 data archive home page.

Description: Contains metadata for objects that have had their astrometry corrected using Gaia EDR3. This table contains the original values from the ObjectThin table that have been updated, the replacement values that are in ObjectThin (highlighted in the comments), as well as additional information on the new astrometry. See PS1 Astrometry Correction Using Gaia EDR3 for details.

Most users will simply use the updated values in ObjectThin; the values in this table may be useful for ongoing research projects that rely on details of the original PS1 DR2 positions.

Name	Unit	Data Type	Size	Default Value	Description
objID	dimensionless	BIGINT	8	NA	Unique object identifier used to join to ObjectThin.
mdra	degrees	FLOAT	8	NA	Initial Right ascension position (J2000) determined from weighted mean of Detection positions (before Gaia correction).
mddec	degrees	FLOAT	8	NA	Initial Declination position (J2000) determined from weighted mean of Detection positions (before Gaia correction).
mdmjd	days	FLOAT	8	NA	**astrometry corrected replacement for epochMean in ObjectThin:** Modified Julian Date (MJD) of the mean epoch corresponding to positions and proper motions. This is the average of mdmjdra and mdmjddec.
mdmjdra	days	FLOAT	8	NA	Weighted mean MJD for measurements that contributed to mdra.
mdmjddec	days	FLOAT	8	NA	Weighted mean MJD for measurements that contributed to mddec.
nmd	dimensionless	INT	4	NA	Number of detection measurements used.
mdraErr	milliarcseconds	FLOAT	8	NA	**astrometry corrected replacement for raMeanErr in ObjectThin:** Standard deviation in RA from weighted single epoch errors. Value is converted to arcsec in ObjectThin.
mddecErr	milliarcseconds	FLOAT	8	NA	**astrometry corrected replacement for raMeanErr in ObjectThin:** Standard deviation in Dec from weighted single epoch errors. Value is converted to arcsec in ObjectThin.
mdpmra	milliarcseconds per year	FLOAT	8	NA	Proper motion in RA determined from weighted mean of Detection positions (before Gaia correction).
mdpmdec	milliarcseconds per year	FLOAT	8	NA	Proper motion in Dec determined from weighted mean of Detection positions (before Gaia correction).
mdpmraErr	milliarcseconds per year	FLOAT	8	NA	**new column pmraErr in ObjectThin:** Standard deviation in pmra from weighted single epoch errors.
mdpmdecErr	milliarcseconds per year	FLOAT	8	NA	**new column pmdecErr in ObjectThin:** Standard deviation in pmdec from weighted single epoch errors.
chisqra	dimensionless	FLOAT	8	NA	**astrometry corrected replacement for posMeanChisq in ObjectThin = (chisqra+chisqdec)/2:** Reduced chi-square in RA PM fit
chisqdec	dimensionless	FLOAT	8	NA	**astrometry corrected replacement for posMeanChisq in ObjectThin = (chisqra+chisqdec)/2:** Reduced chi-square in Dec PM fit
dcr	dimensionless	BIT	1	NA	Differential chromatic refraction correction applied: 1=yes, 0=no
ra	degrees	FLOAT	8	NA	**astrometry corrected replacement for raMean in ObjectThin:** RA from single epoch detections (weighted mean) in equinox J2000 at the mean epoch given by epochMean after correction using Gaia EDR3 using the algorithm described in the paper.
dec	degrees	FLOAT	8	NA	**astrometry corrected replacement for decMean in ObjectThin:** Dec from single epoch detections (weighted mean) in equinox J2000 at the mean epoch given by epochMean after correction using Gaia EDR3 using the algorithm described in the paper.
pmra	milliarcseconds per year	FLOAT	8	NA	**new column pmra in ObjectThin:** Proper motion in RA from single epoch detections after correction using Gaia EDR3 using the algorithm described in the paper.

pmdec	milliarcseconds per year	FLOAT	8	NA	**new column pmdec in ObjectThin:** Proper motion in Dec from single epoch detections after correction using Gaia EDR3 using the algorithm described in the paper.
cx	dimensionless	FLOAT	8	NA	**astrometry corrected replacement for cx in ObjectThin:** Cartesian x on a unit sphere.
cy	dimensionless	FLOAT	8	NA	**astrometry corrected replacement for cy in ObjectThin:** Cartesian y on a unit sphere.
cz	dimensionless	FLOAT	8	NA	**astrometry corrected replacement for cz in ObjectThin:** Cartesian z on a unit sphere.
htmid	dimensionless	BIGINT	8	NA	**astrometry corrected replacement for htmID in ObjectThin:** Hierarchical triangular mesh (Szalay 2007) index.
Values for columns below are the original values from ObjectThin, copied before the astrometry update was applied. **NOTE:** When querying this table, if these original column values are all NULL it indicates that the object (objid) does not exist in ObjectThin. That applies mainly to objects south of declination -30 degrees.					
raMean	degrees	FLOAT	8	-999	Right ascension from single epoch detections (weighted mean) in equinox J2000 at the mean epoch given by epochMean.
decMean	degrees	FLOAT	8	-999	Declination from single epoch detections (weighted mean) in equinox J2000 at the mean epoch given by epochMean.
raMeanErr	arcsec	REAL	4	-999	Right ascension standard deviation from single epoch detections.
decMeanErr	arcsec	REAL	4	-999	Declination standard deviation from single epoch detections.
epochMean	days	FLOAT	8	-999	Modified Julian Date of the mean epoch corresponding to raMean, decMean (equinox J2000). Note that Gaia DR1 data is sometimes included in the mean position (see the FAQ for details); in those cases, the epochMean value is near the Gaia DR1 epoch 2015.5 = MJD 15023. As a result, epochMean is not necessarily near the mean value of the PS1 measurement dates. That is no longer true of the new astrometry-corrected value of epochMean – the new positions do not include any Gaia position or epoch information in the calculations except to calibrate local disortions in the PS1 coordinate system.
posMeanChisq	dimensionless	REAL	4	-999	Reduced chi squared value of mean position.
cxOrig	dimensionless	FLOAT	8	NA	Cartesian x on a unit sphere.
cyOrig	dimensionless	FLOAT	8	NA	Cartesian y on a unit sphere.
czOrig	dimensionless	FLOAT	8	NA	Cartesian z on a unit sphere.
htmIDOrig	dimensionless	BIGINT	8	NA	Hierarchical triangular mesh (Szalay 2007) index.