

Getters provided by Catalog Simulations mixins

Below is a list of the presently available mixins and the columns they can calculate. Click on the name of the mixin to see the import statement needed to find it as well as the columns it can calculate ([this page](#) discusses how to write your own methods to calculate column values):

from lsst.sims.coordUtils.Astrometry import AstrometryBase

note that importing CameraCoords, AstrometryStars, or AstrometryGalaxies will give you access to the methods in AstrometryBase, as those mixins inherit from AstrometryBase

provides:

- glon, glat - the galactic longitude and latitude of a source in radians
- x_focal_nominal, y_focal_nominal - an object's (x,y) position on the focal plane, assuming a perfect gnomonic projection (this is not actually the object's pixel coordinates; that is provided elsewhere)
- x_pupil, y_pupil - an object's pupil coordinates in radians

from lsst.sims.coordUtils.Astrometry import AstrometryGalaxies

provides:

- All of the columns from AstrometryBase above
- raObserved, decObserved - the apparent RA and Dec for an object in radians. Applies precession, nutation, aberration, and atmospheric refraction
- raPhoSim, decPhoSim - raObserved and decObserved but neglecting refraction by the atmosphere (this is because phoSim handles refraction itself and requires the user to supply unrefracted apparent positions for objects)

from lsst.sims.coordUtils.Astrometry import AstrometryStars

provides:

- All of the columns from AstrometryBase above
- raObserved, decObserved - the apparent RA and Dec of an object in radians. Applies precession, nutation, proper motion, radial velocity, parallax, aberration, and atmospheric refraction
- raPhoSim, decPhoSim - raObserved and decObserved but neglecting refraction by the atmosphere (this is because phoSim handles refraction itself and requires the user to supply unrefracted apparent positions for objects)

from lsst.sims.coordUtils.Astrometry import CameraCoords

(this mixin will only be relevant if you catalog class has an associated camera object)

provides:

- All of the columns from AstrometryBase above
- chipName - the name of the chip on which the camera falls
- xPix, yPix - the pixel coordinates of the object on the camera
- xFocalPlane, yFocalPlane - the focal plane coordinates of the object

from lsst.sims.photUtils.Photometry import PhotometryGalaxies

provides:

- lsst_[u,g,r,i,z,y] - the total magnitude of a galaxy in the LSST [u,g,r,i,z,y] band
- [u,g,r,i,z,y]Bulge - the magnitude of the galaxy's bulge component in the LSST [u,g,r,i,z,y] band
- [u,g,r,i,z,y]Disk - same as above for the galaxy's disk component
- [u,g,r,i,z,y]Agn - same as above for the galaxy's AGN component (if present)
- sigma_lsst_[u,g,r,i,z,y] - magnitude uncertainty in [u,g,r,i,z,y]Recalc
- sigma_[u,g,r,i,z,y]Bulge - same as above for [u,g,r,i,z,y]Bulge
- sigma_[u,g,r,i,z,y]Disk
- sigma_[u,g,r,i,z,y]Agn

from lsst.sims.photUtils.Photometry import PhotometryStars

provides:

- lsst_[u,g,r,i,z,y] - the magnitude in the LSST [u,g,r,i,z,y] band
- sigma_lsst_[u,g,r,i,z,y] - the magnitude uncertainty in lsst_[u,g,r,i,z,y]

from lsst.sims.photUtils.EBV import EBVMixin

provides:

- EBV - the E(B-V) value for a source
- galacticRv - Rv due to extinction in the Milky Way

To learn how to write your own getters, see [this page](#).

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