

So we had  $RA_i^k$   $k$  - galaxy.  
 $i$  - year

22/1/2015

$\overline{RA}^k$  = median position

$$\Delta RA_i^k = RA_i^k - \overline{RA}^k = \text{Residuals.}$$

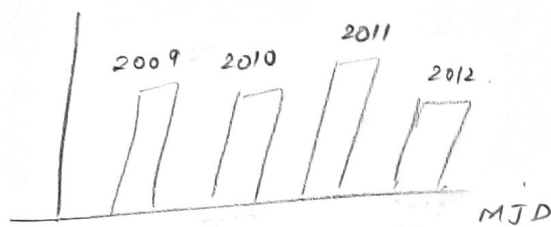
but 'i' index has to be defined.  $i \rightarrow$  epoch.  
 'time' of measurement

In data, 'i' has units as 'mjd'

① bin

② convert 'mjd'  $\rightarrow$  years.

plot histogram



you should observe 4 distinct bins

$\rightarrow$  then you take all  $\Delta RA_i^k$  such that

$$MJD_i - \Delta t \leq MJD \leq MJD_i + \Delta t$$

$\rightarrow$  median.

so you now have,

$\overline{\Delta RA}_i$  - the median offset of <sup>galaxy</sup> residuals. for  $i$ th year

$$\Rightarrow RA_{New}^k = RA_i^k - \overline{\Delta RA}_i$$

$$RA_{New}^k = \text{Med}(RA_{New}^k)$$

binning Method 1

example: 1, 2, 3, 20, 21, 22, 30

$$\Delta t = MJD[1:] - MJD[0:-1]$$

$$\begin{array}{r} 23 \ 20 \ 21 \ 22 \ 30 \\ - \ 1 \ 2 \ 3 \ 20 \ 21 \ 22 \\ \hline 1 \ 1 \ 17 \ 1 \ 1 \ 8 \end{array}$$

$\uparrow$  you know something  
 $\downarrow$  drastic happened here!

[3] index

$\rightarrow$  detect this.

so,  $t_{break} = MJD[3]$ ,  $index = MJD < MJD[3]$

{ astrometry-functions.py

split-into-epochs()

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