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Import packages
set roAp file to r
set cluster file from Gaia to c
make r a Dataframe and set to roAp
make c a Dataframe and set to clust
Append Dataframes and set GMAG to y for both roAp and clust
Append Dataframes and set BP-RP to x for both roAp and clust
Transpose x and y values of roAp Dataframe and set to 1xM array
|GMAG of clust - GMAG of roAp| and set to a NxM array yrc
|BP-RP of clust - BP-RP of roAp| and set to a NxM array xrc
finding the ellipse angle parameter by setting theta = arctan(yrc/xrc)
square the errors of GMAG and BP-RP for both roAp and clust arrays
Transpose x and y sigmas of roAp Dataframe and set to 1xM array
finding sqrt(GMAG of clust and GMAG of roAp) and set to NxM syrc
finding sqrt(BP-RP of clust and BP-RP of roAp) and set to NxM sxrc
set syrc to semi-minor axis (b) of ellipse
set sxrc to semi-major axis (a) of ellipse
set b*sin(theta) to the theoretical y position
set a*cos(theta) to the theoretical x position
plot known data to show the entire color magnitude diagram
calculating the zeroth error ellipse from semi major and minor axes
plotting the zeroth roAp star with its error ellipse to demonstrate
repeating this with all roAps
plotting all error ellipses vs. clust for visualization with n*sigmas
for int in range(len(clust array))
    if (theoretical y and x positions are less than real postions)
        classify as candidate and set to cand
        store cand as Dataframe
export cand as csv file
plot cand vs. roAps, clust, and error ellipses with n*sigmas
compare data with previous data found from regression algorithm
plot similarities and discontinuities
store and export all data and catigorize if repeated

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