Introduction to the AIKO library

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Introduction

- Selecting HDF5 data from AREPO
- Reading and converting to Pandas Dataframe
- Interpolating data to produce smooth orbits
- Displaying individual orbits and galaxy projections

Functions

- a = aiko.arepo_reader(path, snapshotRange)

  (select data and start read instance)

- data = a.read_arepo_raw()

  (reads the raw particle data and returns dataframe)

- groupData = a.read_arepo_gal()

  (reads the galaxy data and returns dataframe)

Format

Pandas Dataframe

Raw/Particles

ID	Dens	Snap	Type	posX	posY	posZ	velX	velY	velZ
17560226	NaN	127	1	47.517715	48.509659	44.931187	-287.444214	280.254395	-110.558060
38022827	2.132294	127	0	2.232121	26.497644	29.104790	-103.359749	344.586884	3.325054
19363927	NaN	127	1	48.255589	47.103157	46.670448	-343.534027	400.057495	-269.753387
34496071	186.536484	127	0	54.491146	48.133171	12.630155	90.705475	94.008240	213.440216
48832399	69474.242188	127	0	24.021444	33.797634	94.812050	25.888832	-179.615112	442.204987

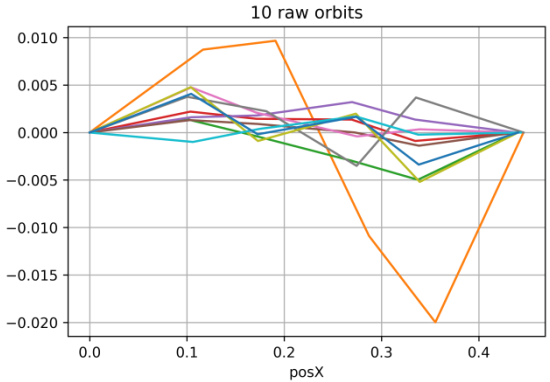
Groups/Galaxy

	velX	velY	velZ	CMX	CMY	CMZ	Radius	posX	posY	posZ	Mass	Snap
429	-455.676056	467.033203	57.396721	43.821274	54.157597	48.047928	0.015845	43.823959	54.156010	48.047832	0.108569	127.0
2366	-308.160706	328.410339	-132.690018	48.239605	49.692600	44.991020	0.009399	48.242775	49.693546	44.991882	0.026470	127.0
1755	-319.303040	465.942383	-146.239441	50.827908	53.190205	46.292515	0.016096	50.829231	53.187157	46.295418	0.076931	127.0
3474	-277.053162	569.949707	30.558687	44.128609	53.063511	46.995667	0.000000	44.128609	53.063511	46.995667	0.019913	127.0
1381	-305.765442	284.033997	-82.333557	47.197319	48.873779	45.766788	0.011256	47.196915	48.873627	45.766624	0.040264	127.0

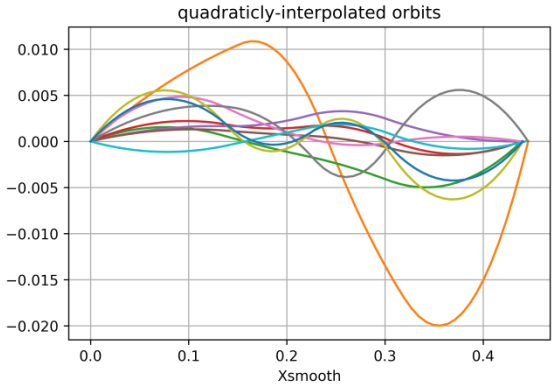
Results

aiko.orbit(data, groupData)

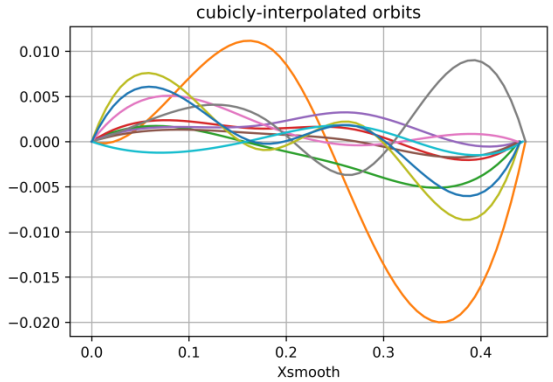
interpol=„linear“



interpol=„quadratic“



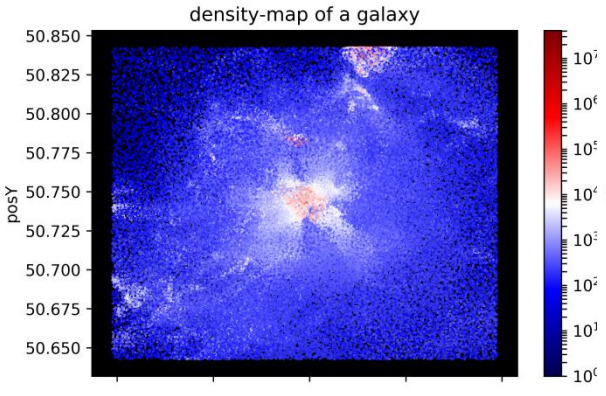
interpol=„cubic"



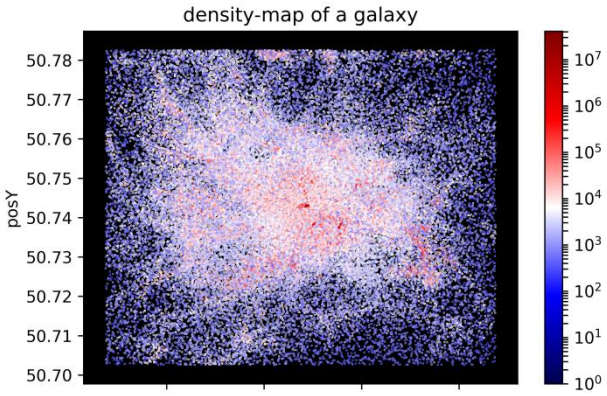
Results

aiko.map(data, groupData)

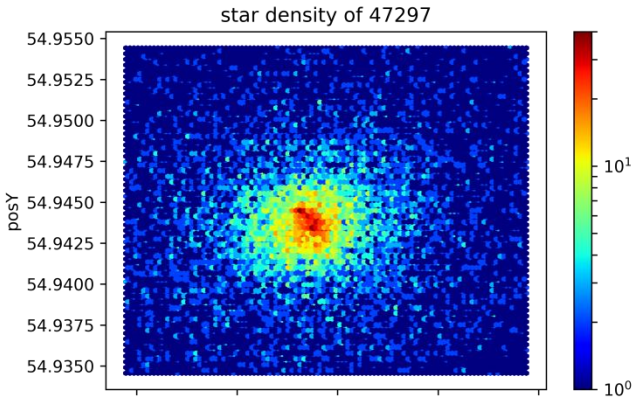
kind=„scatter“



kind=„scatter“

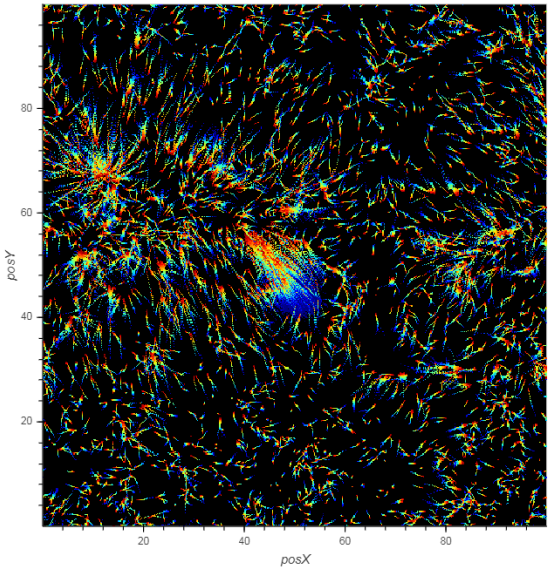


kind=„hexmap"

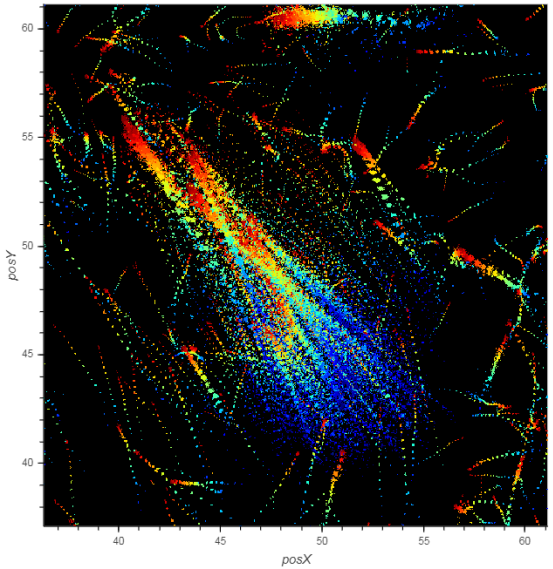


Thank You (Demo?)

Universe



Galaxies



Stars