PanGaia: A Python toolkit to identify over-densities in the main Gaia catalogue

With various data products for nearly 2 billion sources, the main catalogue produced by the Gaia mission is an ideal dataset to search for over-densities (clusters) that indicate different types of astronomical phenomena. In this talk I will present PanGaia, a user-friendly Datalabs written in Python that allows to easily identify clusters in the Gaia catalogue applying one of the most popular non-supervised machine learning algorithms (HDBSCAN). This software allows the user to 1) retrieve the Gaia data for a given region using ADQL pre-computed queries, 2) visualise it using pyESASky and various dynamical (Python) tools, and 3) identify member candidates of the clusters contained in the studied sample by means of HDSBCAN. PanGaia is currently optimised to detect 5-dimensional clusters of objects like star forming regions or open clusters. I will briefly describe this software and present the results obtained after applying it to different well-known regions in our Galaxy.