

A Database for Studying Edge-On Galaxies

A. V. Antipova and D. I. Makarov

Special Astrophysical Observatory, Russian Academy of Sciences, Nizhny Arkhyz,
Russia

`osen.nayti@gmail.com`

Abstract. We present a database of edge-on galaxies. The goal is to combine together numerous observational information on edge-on galaxies. The data systemization provides easy access to the data, extensibility of the data base, and allows accelerate the data analysis. The database structure includes a table that describes data sets, a table describing each specific object with its own data set, tables containing kinematic data and photometric data. In addition, this database contains a list of galaxy candidates, edge-on galaxies, based on the Pan-STARRS survey.

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Edge-on galaxies are practically the only galaxies in which it is possible to study the vertical distribution of matter. They are interesting both for studying the distribution of visible and dark matter in galaxies, and for a better understanding of the formation and evolution of galaxies.

The Edge-on Galaxy Database was based on three catalogs of edge-on galaxies: catalog according to the Palomar Observatory Sky Survey (Revised Flat Galaxy Catalog, RFGC) (Karachentsev et al. 1999), catalog of edge-on disk galaxies according to SDSS data survey (Catalog of Edge-on Disk Galaxies from SDSS, EGIS) (Bizyaev et al. 2014) and the Catalog of flat galaxies identified in the 2MASS survey (2MASS-selected Flat Galaxy Catalog, 2MFGC) (Mitronova et al. 2004).

Our edge-on galaxy database is powered by PostgreSQL, which is a free relational database management system.

The relationship between objects in different catalogs is carried out using a unique identifier, the PGC number of galaxies in the HyperLeda database¹. This allows us to link together information from various catalogs and databases, and visualize together the entire dataset.

¹ <http://leda.univ-lyon1.fr/>

The web interface allows us to visualize a whole catalog in form of a table of objects. The information map of an individual object shows detailed information including photometry, spectroscopy, kinematics. In addition to universal visualization methods, each specific dataset can have its own display system, for more flexible presentation of the features of the catalog. The database provides interface for the object search by coordinates and various object parameters.

In the future, we plan to supplement the database with the data obtained in the framework of the program “Kinematics of ultrathin galaxies”, which is conducted at the 6-meter Russian telescope (BTA SAO RAS). In framework of this survey, we plan to fulfill the spectroscopy of 160 ultra-thin galaxies without a known rotation velocity, visible in the northern sky. The data obtained will be used to plot rotation curves and obtain their parameters. The results of the analysis, as well as the rotation curves themselves, are planned to be published in the database.

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