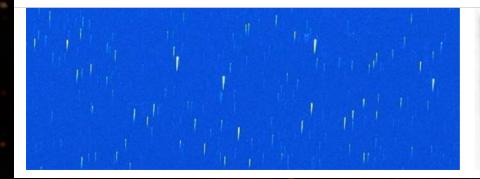# Armenian Virtual Observatory (ArVO)

ArVO is a project of the Byurakan Astrophysical Observatory (BAO) aimed at construction of a modern system for data archiving, extraction, acquisition, reduction, use and publication. ArVO is based on the Digitized First Byurakan Survey (DFBS) and is the Armenian contribution to the International Virtual Observatories Alliance (IVOA). One of the ArVO's main tasks is to create and utilize a global Spectroscopic Virtual Observatory, which will combine data from DFBS and other low-dispersion spectroscopic databases, as well as provide the first understanding on the nature of any object up to B=18^m.

In frame of the ArVO, BAO collaborates with the Institute of Information Technologies (IIT) of the Armenian National Academy of Sciences to develop software for ArVO corresponding to the IVOA standards. Beside the DFBS, ArVO is being complemented by the Digitized Second Byurakan Survey (SBS) database, the Byurakan photographic archive, and the BAO 2.6m telescope observations, and will be a part of IVOA.

International Virtual Observatory Alliance

Digitized First Byurakan Survey - DFBS

The **Digitized First Byurakan Survey (DFBS)** is the digitized version of the famous Markarian survey, called also the First Byurakan Survey (FBS). It is the largest spectroscopic database in the world, providing low-dispersion spectra for 20,000,000 objects. DFBS is a joint project of the Byurakan Astrophysical Observatory (BAO), Cornell University (USA) and Universita di Roma "La Sapienza" (Italy). The whole Northern sky and part of the Southern sky at high galactic latitudes have been observed in FBS, altogether more than 17,000 deg^2. It is especially valuable for extragalactic research. 1500 UV-excess galaxies (Markarian galaxies), 1100 blue stellar objects and 900 late-type stars have been discovered on the basis of FBS, as well as 1600 infrared (IRAS) sources have been optically identified.

Digitized Second Byurakan Survey – DSBS

The Second Byurakan Survey (SBS) was carried out by Markarian, Stepanian, Erastova, Lipovetski, Chavushyan, and Balayan in 1978-1991 on the Byurakan Observatory 102/132/213cm Schmidt telescope with 1.5°, 3° and 4° prisms, in combination with hyper sensitized Kodak IIIaJ and IIIaF plates and filters, giving different ranges of spectrum (3500-5400A, 4950-5400A and 6300-6950A, respectively) (Markarian & Stepanian 1983, Stepanian 1996). In all, 550 plates have been obtained in 65 fields, 4°x4° each. SBS covers 965 deg^2 area at high galactic latitudes ($|b|$>30) with $07^h43^m<\alpha<17^h15^m$ and $+49<\delta<+61$. The limiting magnitude differs in the range of 18^m-20^m in V, and the survey is complete to 17.5^m. 7 fields (covering 112 deg^2) have limiting magnitudes 19.5^m -20^m (so-called Selected or Deep Fields of the SBS), and are of special interest. The dispersion near H-γ for spectra obtained with 1.5°, 3° and 4° prisms is 1800A/mm, 900A/mm, and 280A/mm, respectively (and 1000A/mm near H-α for the 4° prism). SBS covers 3 zones of the FBS, with central declinations +51°, +55° and +59°. In average, each SBS plate contains low-dispersion spectra of some 50,000 objects, and there are some 3,000,000 objects in the whole survey.

The Armenian Virtual Observatory will develop in the following way:

- Development of **ArVO** on the basis of the **DFBS** database
- Digitization of the **Second Byurakan Survey (SBS)**
- Accomplishment of **other digitization projects** at BAO (FBS BSOs spectra, Coma region chains, etc.)
- Digitization of the whole **Byurakan archive plates**
- Creation of a joint low-dispersion spectroscopic database in the North (**FBS+SBS+others**)
- Development of an automatic identification procedure for **X-ray, IR** and **radio** sources
- **Optical identification** of ~100,000 X-ray, IR & radio sources using low-dispersion spectra
- Development of an automatic **search procedure** for modeled objects
- **Automatic search** new bright **AGN** in **DFBS/DSBS** (by modeling template spectra for AGN)
- Creation and setting the **AVO standards** in ArVO

ArVO is a project of the Byurakan Astrophysical Observatory (BAO) and the Institute for Informatics and Automation Problems (IIAP) aimed at construction of a modern system for data archiving, extraction, acquisition, correlation, reduction, use and publication. ArVO is based on the Digitized First Byurakan Survey (DFBS) and is the Armenian contribution to the International Virtual Observatory Alliance (IVOA).

In this page ArVO Tools & Services are presented: **DFBS archive, ArVO Data Discovery tool, Catalogue cross-matching service,** and **DFBS spectra extraction service** (the latter one still being under development). More information about ArVO is given on ArVO documentation page.

1. DFBS archive page gives access to all DFBS data, view the plates and spectra of their sources. More about DFBS archive you can read here.

2. ArVO Data Discovery tool gives possibility to access to all available data on it, which is dynamically updating by astronomers and developers.

3. Catalogue cross-matching service includes a new cross-correlation program, which is doing the correlation of uploaded or available on server catalogues using as correlation radius for each pair of sources their RMS average error multiplied by some input constant. You can upload your own catalogues, run the service and download the resulting list. The new program is more accurate than the classic cross-correlation methods.

4. Spectra Extraction service will include a tool which extracts astronomical spectra catalogs from uploaded fits files.

Cross-correlation page

Please upload catalogs to correlate those with each other or with available on the server catalogs. You must read requirements for uploaded catalogs before starting a correlation.

Выберите файл Файл не выбран   Выберите файл Файл не выбран

IRAS/PSC   IRAS/FSC

By RMS - 3.0 sigma   By Radius (arcsec) 10.0

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