

ASPID-SR: Prototype of a VO-compliant Science-Ready Data Archive

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Abstract. ASPID stands for the "Archive of Spectral, Photometric, and Interferometric Data". The world largest collection of raw 3D spectroscopic observations of galactic and extragalactic sources is provided. ASPID-SR is a prototype of an archive of heterogeneous science ready data, fed by ASPID, where we try to exploit all the power of the IVOA Characterisation Data Model. Multi-level Characterisation metadata is provided for every dataset. The archive provides powerful metadata query mechanism with access to every data model element, vital for the efficient scientific usage of a complex informational system. We provide a set of access interfaces: SIAP/SSAP, HTTP-based characterisation metadata query, Web-service accepting ADQL/x.

1. Introduction

Interoperability between various data archives and data discovery, retrieval and analysis tools is a cornerstone for a success of the International Virtual Observatory. Data model, providing full and self-sufficient description of a dataset, is an essential for the interoperability. Characterisation DM of IVOA (McDowell

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et al. 2006) is one of the most general data models, positioning the dataset in the space of physical parameters.

ASPID stands for the "Archive of Spectral, Photometric, and Interferometric Data". It is operated by the Laboratory of Spectroscopy and Photometry of Extragalactic Objects and contains over 72000 raw observational datasets coming from selected instruments at the 6-m telescope of SAO RAS since 1992: direct images; 1D, long-slit, multi-object, and IFU spectroscopy; Fabry-Perot datacubes; spectropolarimetric observations. The world largest collection of 3D spectroscopic observations of galactic and extragalactic sources is provided.

2. Implementation

As a backend of ASPID-SR we use the open-source PostgreSQL database engine with the initial XMLType support, implemented in a frame of the Google Summer of Code-2006 by Nikolai Samokhvalov (see poster by Zolotukhin et al. for technical details of the database and query interface implementations). Queries on spatial coordinates are implemented using pgSphere extension (Chilingarian et al. 2004b), providing capabilities to deal with geometrical objects on a sphere.

3. Capabilities

Multi-level Characterisation metadata is provided for every dataset. We have shown applicability of Characterisation DM to description of 3D datasets (Chilingarian et al. 2006). We were directed by the latest conventions by the IVOA Data Models working group on the mandatory Characterisation metadata. For every dataset we provide first two detailization levels of the characterisation metadata (location or reference value and bounds) for Coverage, Resolution, and Sampling Precision properties of Spatial, Spectral, Time, and Observable (Flux) axes of the data model.

Queries will be allowed on all these metadata (including Characterisation AxisFrame fields). This is a vital point the efficient scientific usage of a complex informational system.

ASPID-SR archive is accessible via PHP-based HTTP-interface at <http://alcor.sao.ru/php/aspid-sr/>

We will provide a set of VO-compliant access interfaces as well:

- SIAP/SSAP
- HTTP-based characterisation metadata query
- Web-service accepting ADQL/x

4. Contents of ASPID-SR

Datasets provided by ASPID-SR are results of reduction of raw data from the ASPID archive, and source-result connection between two archives is preserved. Only data older than the PI's proprietary period of two years (according to SAO RAS Observational Data Archive Regulations), or datasets provided by their PI are available in our science-ready data archive. Data reduction of complex IFU spectra and IFP datasets was mostly done by members of LSPEO: VA, SD, and

Dr. Alexei Moiseev. Other data such as long-slit spectra and direct images are normally reduced by PI's of the observing programmes.

5. Summary

ASPID-SR is one of the first implementations of the Characterisation Data Model, and we believe it is an important step toward development of VO-aware complex astronomy informational systems.

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