The Brazilian Science Data Center
An experience in the context of ‘Open Universe’

Ulisses Barres de Almeida (CBPF) on behalf of the BSDC Team*

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What is the BSDC?

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- Built from start within the concept proposed by the Open Universe Initiative
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A cost-effective model for developing countries
Requirements for a Science Data Center in the context of the ‘Open Universe’ initiative:

- **Transparency**
- **Resurfacing Data**
- **Broad User-base**
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- Easy of access and usage
- Powerful interface: focus on data mining software
- Collaborate with the IVOA community to enhance VO experience

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- Interoperability with other existing tools: “the ship in a fleet”
- Development of meaningful interface for specific science (CR, v, Polar.)

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**Broad User-base**
- The SDC as a data mining tool, as opposed to a repository
- Strong interaction with the community of users and providers
- A platform open for other people’s data and software tools / ideas.
Motivations for an SDC in Brazil

- **Space science for development.** Transparent access to data + flexible and meaningful tools for data handling have the potential to impact in education and formation of human resources.

- **Scientific information in the right context.** Data mining and integration is crucial for driving knowledge and potential new research avenues, specially in the era of big data.
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Not a repository, not a set of protocols.
A data mining platform.
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... but also

• **Collaboration with other VO services and Open Universe.** The BSDC is built for a context of cooperation, concerned with delivering products and productivity — a model we consider interesting for other emerging countries.
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Activities of the BSDC

The BSDC is in development at CBPF (Rio) since 2016. First, as a database experiment in the context of scientific collaborations between Brazil and ICRANet.
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- SDSS White Dwarf catalog;
- WISE Blazar Candidates Catalog;
- New Catalog of Fermi-LAT BLLacs;

1-BIGB Catalogue

1st brazilian-ICRANet gamma-ray blazars catalogue

Searching for γ-ray signature in WHSP blazars:
Fermi-LAT detection of 150 excess signal in the 0.3-500 GeV band.

B. Arsioli\textsuperscript{1,2,3} and Y-L. Chang\textsuperscript{1,2}

Astronomy & Astrophysics manuscript no. 150NewGammaRaySources

September 28, 2016

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- ICRANet GRB Catalog…
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Welcome to the BSDC Virtual Observatory.

This is the web interface for all catalogs hosted in our data base. Each of the catalogs related pages will provide you a form to better, specifically choose the objects you want based on location, name or properties in some cases. In case you want to select/view the entire catalog just leave all the fields blank and push the Go button.

The catalogues you'll find should also be accessible through IVO managed services, like SCS, SSA and TAP protocols.

Please check out for the additional services provided numerous tables using TAP or form-based ADQL.

Site help

Services Available

- 1WHSP blazar candidates catalog
- BdHNe
- Magic Public Spectra Web Interface
- SDSS-DR10 white dwarfs catalog
- UHECR
- VERITAS Spectra Web Interface

vo.bsdc.icranet.org
Activities of the BSDC

Since early 2017, motivated by the Open Universe Initiative, we are building a full-scale online data platform. Activities are starting from research-critical topics.

- VHE Legacy Database, in collaboration with VERITAS (and now HESS).
  - For the first time, appropriate data formats for the field are being developed, in collaboration with the individual data providers to release their final data products in a comprehensive way for the first time.
  - Data is released in VO format (for everyone). The BSDC helps with the release, then provides a platform for integration and adequate / specific tools to interact with the data online.
Activities of the BSDC

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- VHE Legacy Database, in collaboration with VERITAS (and now HESS).
- Optical Polarimetry database.
  - For the first time, an effort to systematically release VO data products in the field and integrate data from multiple optical polarisation providers (usually medium-size observatories or networks) is being undertaken.
  - BSDC helps with data standards definition, data release with the VO, and the creation of the first dedicated interface for optical polarimetry (under construction)
The prototype BSDC Interface

The BSDC is managed by the Brazilian Center for Research in Physics (CBPF). We would appreciate that the use of BSDC for research be acknowledged in your publications.
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- VHE Legacy Database, in collaboration with VERITAS (and now HESS).
- Optical Polarimetry database.
- Activities involving new data (Resurfacing) and increased usability (Transparency) necessarily require the development of new tools with the potential to contribute to, and enhance the VO experience.
Activities of the BSxDC

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- Optical Polarimetry database.
- Activities involving new data (Resurfacing) and increased usability (Transparency) necessarily require the development of new tools with the potential to contribute to, and enhance the VO experience.

Release of the tools and interface is expected for the end of the year.
The Brazilian Science Data Center (BSDC)

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Astrophysics and Space Science are becoming increasingly characterised by what is now known as "big data", the bottlenecks for progress partly shifting from data acquisition to "data mining". Truth is that the amount and rate of data accumulation in many fields already surpasses the local capabilities for its processing and exploitation, and the efficient conversion of scientific data into knowledge is everywhere a challenge. The result is that, to a large extent, isolated data archives risk being progressively likened to "data graveyards", where the information stored is not reused for scientific work.