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# IVOA NEWSLETTER

November 2009

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The International Virtual Observatory Alliance (IVOA) was formed in June 2002 with a mission to "facilitate the international coordination and collaboration necessary for the development and deployment of the tools, systems, and organizational structures necessary to enable the international utilization of astronomical archives as an integrated and interoperating virtual observatory." The IVOA now comprises 17 VO projects from Armenia, Australia, Brazil, Canada, China, Europe, France, Germany, Hungary, India, Italy, Japan, Korea, Russia, Spain, the United Kingdom, and the United States. Membership is open to other national and international projects according to the IVOA Guidelines for Participation. You can read more about the IVOA and what we do at <http://www.ivoa.net/pub/info/>.

## What is the VO?

The Virtual Observatory (VO) aims to provide a research environment that will open up new possibilities for scientific research based on data discovery, efficient data access, and interoperability. The vision is of global astronomy archives connected via the VO to form a multiwavelength digital sky that can be searched, visualized, and analyzed in new and innovative ways. VO projects worldwide working toward this vision are already providing science capabilities with new tools and services. This newsletter, aimed at astronomers, highlights VO tools and technologies for doing astronomy research, recent papers, and upcoming events

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## VO APPLICATIONS HIGHLIGHTS

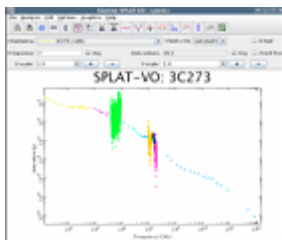
### VO Interoperability in DS9



SAOImage DS9 is a standalone astronomical imaging and data visualization application. DS9 supports FITS images and binary tables, multiple frame buffers, region manipulation, and many scale algorithms and colormaps. It provides for easy communication with external analysis tasks and is highly configurable and extensible via messaging capabilities XPA, and the VO messaging protocol SAMP. Versions of DS9 currently exist for Linux, MacOSX, and Windows. DS9 supports advanced features such as multiple frame buffers, mosaic images, tiling, blinking, geometric markers, colormap manipulation, scaling, arbitrary zoom, rotation, pan, and a variety of coordinate systems.

**More information:** <http://hea-www.harvard.edu/RD/ds9/>

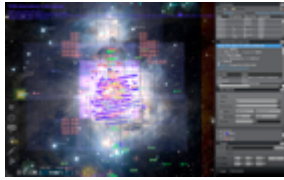
### SPLAT-VO: Spectral Analysis Tool



SPLAT-VO is a spectral analysis tool that has been integrated into the VO. It can display, compare, modify, and analyze astronomical spectra stored in a number of formats, including FITS images, tables, and simple text files. It has full support for spectral coordinate systems in wavelength, frequency, energy, and velocity, and also for standard flux data units. SPLAT-VO can also convert coordinates between various frames of rest, topocentric, heliocentric etc. and has support for sub-millimetre sideband coordinate systems. Integration with the VO is fully supported for spectra stored in remote servers and communication has been updated to work with any VO-enabled tools.

**More information:** <http://star-www.dur.ac.uk/~pdraper/splat/splat-vo/>

**VirGO - New capabilities for browsing VO resources and more**



VirGO 1.4.4 presents new functions and capabilities enabling astronomers to take advantage of the power offered by the standards of the VO. VirGO now comes with access to VO resources from ESO and external data centres like the Hubble Space Telescope archive, the Canadian Astronomical Data Centre, the European Space agency archive and others. A new configuration panel allows users to easily enable, disable, and add resources in one click. Connections to other VO tools are now done with the VO messaging protocol SAMP, the user interface has been refined to make it more intuitive and faster, and VirGO can now also operate behind network proxies if required. A user guide will help you get started, and includes a detailed description of the user interface, and example use cases.

**More information:** <http://archive.eso.org/cms/virgo/>

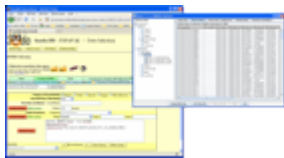
### ATPy - VOTables in python



Astronomical Tables in Python (ATpy) is a Python module that allows users to read, edit, convert, and save data in VOTable, FITS table, IPAC table, and SQL database formats. ATpy makes use of existing python modules to simplify the process of using and storing table data in a format-independent way. This makes sharing the data with others convenient and straightforward, and will help the widespread adoption of the VOTable format. The developers are always looking for feedback from users. Contact the developers via the ATpy forums or by emailing them.

**More information:** <http://atpy.sourceforge.net>

### Your databases in the VO with Saada



Saada helps you to build databases for astronomy data. With Saada, databases may be created, managed, and deployed without the need to write code. Saada databases can mix data of different categories (spectra, images, catalogues, etc.) in multiple collections, and they come with a rich web interface and with native VO services making the publication of images, catalogues, and spectra into the VO very easy. Data stored in Saada databases can be linked each to other with persistent links to assist data browsing, and for data mining queries.

**More information:** <http://saada.u-strasbg.fr>

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## SOME RECENT PAPERS ABOUT VO-ENABLED SCIENCE

### Refereed Publications

- Properties of dusty tori in active galactic nuclei - II. Type 2 AGN Hatziminaoglou et al., MNRAS. 399, 1206
- A population of compact elliptical galaxies detected with the Virtual Observatory Chilingarian et al., 10.1126/science.117593
- SDSS J125637-022452: A High Proper Motion L Subdwarf Sivarani T., Lépine S., Kembhavi A.K., Gupchup J., 2009, ApJL, 694, 140
- The LAEX and NASA portals for CoRoT public data Solano et al., 2009, A&A, in press, arXiv:0907.3405
- The chemical abundance analysis of normal early A- and late B-type stars Fossati et al., 2009, A&A, 503, 945
- Exo-Dat: An Information System in Support of the CoRoT/Exoplanet Science Deleuil et al., 2009, AJ, 138, 649
- GALEX-SDSS Catalogs for Statistical Studies Budavari et al., 2009, ApJ, 694, 1281
- Data Mining and Machine Learning in Astronomy Ball M., Brunner R.J., 2009, International Journal of Modern Physics
- Quasar candidates selection in the Virtual Observatory era D'Abrusco R., Longo G., Walton N.A., 2009, MNRAS, 396, 223
- X-Ray Variability of  $\sigma$  Orionis Young Stars as Observed with ROSAT Caballero J.A. et al., 2009, AJ, 137, 5012
- An IPHAS-based search for accreting very low-mass objects using VO tools Valdivielso L. et al., 2009, A&A, 497, 973

- Stellar populations in a standard ISOGAL field in the Galactic disc Ganesh S. et al., 2009, A&A, 493, 785
- Infrared Imaging of Sloan Digital Sky Survey Quasars: Implications for the Quasar K Correction Kenefick & Bursick, 2008, AJ, 136, 1799

### More Ways to Find VO-related Publications

- All ADS links mentioning the "virtual observatory" in the abstract
- All refereed publications mentioning the "virtual observatory" in the abstract

## VO CALENDAR

### 9-13 November, 2009 - IVOA Interoperability Meeting

Garching bei Munchen, Germany

The IVOA Interop Meetings are aimed at making significant progress in defining standards and sharing best practices in the development of the world wide Virtual Observatory initiatives.

### 30 November 2009 - April 2010 - Italian VO Day ... on Tour

A set of workshops is being organized for all interested Italian astronomical institutions to expose astronomers to the use of VO tools and services through "hands-on" sessions.

### 30 November - 4 December, 2009 - Astronomy 2009

Leiden, The Netherlands

Fifty participants from around the world will be taking part in this week-long conference exploring the connections between astronomy and the Internet.

### 21 January 2010 - Swiss VO Day

Observatoire de Geneve, Switzerland

The aim of this workshop is to expose Swiss astronomers to the variety of VO tools and services available today.

### 25-28 January, 2010 - Second EuroVO-AIDA School

Observatoire de Strasbourg, France

The goal of the school is to expose European astronomers to the variety of VO tools and services available today so that they can use them efficiently for their own research. Deadline for registration is November 20, 2009.

### 7-11 Nov 2010 - ADASS XX

Boston, MA, USA

The Astronomical Data Analysis Software and Systems (ADASS) conference provides a forum for scientists and programmers concerned with algorithms, software and software systems employed in the acquisition, reduction, analysis, and dissemination of astronomical data.

## International Virtual Observatory Alliance

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