

IVOA Newsletter - May 2014

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IVOA Newsletter Editors: Mark G. Allen, Deborah Baines, Sarah Emery Bunn, Chenzou Cui, August Muench, Mark Taylor, & Ivan Zolotukhin.



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 20 VO programs from Argentina, Armenia, Australia, Brazil, Canada, Chile, China, Europe, France, Germany, Hungary, India, Italy, Japan, Russia, South Africa, Spain, Ukraine, the United Kingdom, and the United States and an inter-governmental organization (ESA). Membership is open to other national and international programs according to the [IVOA Guidelines for Participation](http://ivoa.net/about/). You can read more about the IVOA and what we do at <http://ivoa.net/about/>.

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.

IVOA NEWS

ChiVO

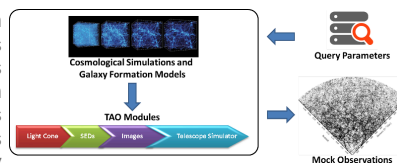
Chilean Virtual Observatory (ChiVO) joins the IVOA The Chilean VO, which is supported by five Chilean universities, ALMA, and the REUNA research consortium, was welcomed into the IVOA at the September 2013 IVOA meeting. ChiVO will focus on building the tools and technology infrastructure necessary for Chilean researchers to take advantage of the terabytes of data that will be produced by ALMA. More information can be found at <http://www.chivo.cl/>.

Moving forward with Data Standards The past six months have seen the recommendation of three new data standards. These include a Photometry Data Model for describing photometric systems, and two specifications for data access services (Data Access Layer Interface, Describing Simple Data Access Services). The VOTable standard, which is an XML standard for the interchange of tables of data and metadata, moved to version 1.3.

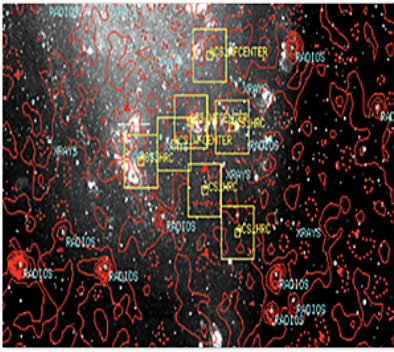


VO APPLICATIONS AND IMPLEMENTATION HIGHLIGHTS

Theoretical Astrophysical Observatory (TAO) The Australian VO is happy to announce the launch of the TAO, which houses queryable data from multiple popular cosmological simulations and galaxy formation models. Results can be funnelled through higher-level modules to build custom mock galaxy catalogues and images. TAO is accessible from anywhere you can access the internet. TAO is part of the All-Sky Virtual Observatory (ASVO) and is funded and supported by Astronomy Australia Limited, the National eResearch Collaboration Tools and Resources (NeCTAR), and Swinburne University of Technology.



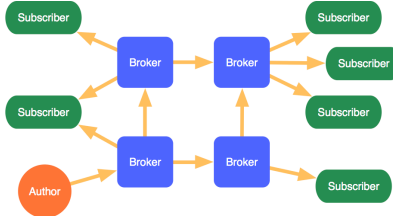
More Information: <https://tao.asvo.org.au/tao/>



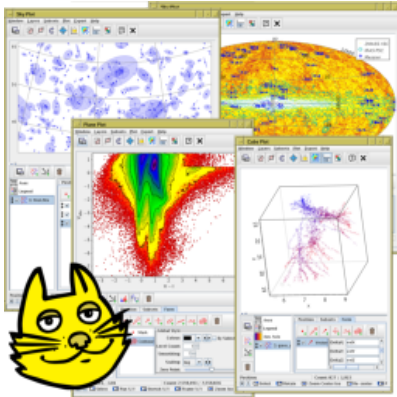
VO Client Release - Access the VO from your desktop The US Virtual Astronomical Observatory (VAO) has released VOClient - a software package that enables direct access to services in the VO from a Unix terminal or scripting environment. The VOClient command-line tools allow you to discover archives and catalogs through queries to the VAO Registry, search-for and download images, spectra, and catalogs, and interoperate with other VO-compatible tools. These tools can be used to create customized access to VO services, new VO tools or enhancements to existing software by adding VO capabilities.

More Information: <http://www.usvao.org/science-tools-services/voclient/>

Comet, a Python implementation of the VOEvent Transport Protocol VOEvent is the IVOA system for describing transient celestial events. Details of transients detected by many projects, including Fermi, Swift, and the Catalina Sky Survey, are currently made available as VOEvents, and it has been selected as the standard alert format by future facilities such as LSST and SKA. Comet is an implementation of the VOEvent Transport Protocol, which makes the fast and reliable distribution of VOEvents to the community possible. Comet enables you to subscribe to real-time streams of ongoing events, to use filters to select only events relevant to your science case and to publish your own events to the global VOEvent backbone. Comet is written in Python, is open source and is freely available from <http://comet.transientskp.org/>.



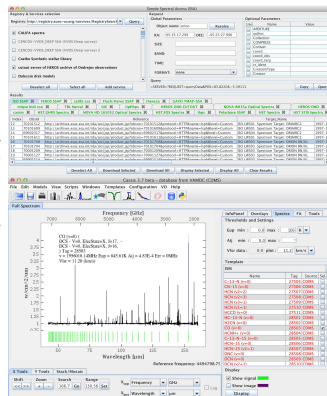
More Information: <http://comet.transientskp.org/>
<https://github.com/jdswinbank/Comet>



TOPCAT Visualisation TOPCAT has recently had an overhaul of its visualisation capabilities. New features include sky axes, the ability to plot vectors, ellipses, contours and analytic functions, hybrid scatter/density plots, improved 3d navigation, better interactive response, LaTeX labelling of axes, more configurability, and better performance for large (multi-million-row) tables. As well as visualisation, TOPCAT continues to provide a wide range of other analysis capabilities for tabular data including VO access, crossmatching and row selections.

More Information: <http://www.starlink.ac.uk/topcat/>

CASSIS: Version 3.6.1 released The latest release of CASSIS (Centre d'Analyse Scientifique de Spectres Instrumentaux et Synthétiques), version 3.6.1, is available for download since March 4, 2014. CASSIS provides tools to visualize and analyze spectra, in particular to perform line identification. A number of changes have been and are being implemented to make CASSIS VO-compatible. CASSIS now includes a Simple Spectral Access (SSA) module and also allows the user to interrogate the VAMDC online database (<http://www.vamdc.eu/access-data/portal>), rather than a local database. Both of these features are illustrated in the accompanying figure: the top panel shows a SSA query on Orion with the responses from different services being displayed in different tabs, while the bottom panel shows the display of the selected ISO-LWS spectrum, overlaid with all CO transitions found in the VAMDC/CDMS database and potentially present in the spectrum (green lines); clicking on any of these lines displays the associated spectroscopic parameters.



More Information: <http://cassis.irap.omp.eu>



ETC-42 ETC-42 is a Generic Exposure Time Calculator developed by CeSAM/LAM. Unlike usual existing ETCs, it can calculate the Signal to Noise Ratio (SNR) for any site and instrumentation type and perform simulations for a wide range of existing or future telescopes. It can simulate objects using theoretical spectral distributions (black bodies, flat energy flux, etc) or with user defined (or imported via SAMP) spectra. Simulation results can be saved, exported or broadcast in VOTable format. A plugin framework is also available for pre and post process of simulations. ETC-42 provides a user friendly Graphical User Interface (GUI) as well as a command line mode supporting script execution.

More Information: <http://projets.oamp.fr/projects/etc>

SOME RECENT PAPERS ABOUT VO-ENABLED SCIENCE

Featured Publication

A Cross-correlation Analysis of Active Galactic Nuclei and Galaxies Using Virtual Observatory: Dependence on Virial Mass of Supermassive Black Hole

Komiya, Yutaka; Shirasaki, Yuji; Ohishi, Masatoshi; Mizumoto, Yoshihiko

The Astrophysical Journal, Volume 775, Issue 1, article id. 43, 12 pp. (2013).

We present results of the cross-correlation analysis between active galactic nuclei (AGNs) and galaxies at redshift 0.1-1. We obtain data of ~10,000 Sloan Digital Sky Survey AGNs in which their virial masses with a supermassive black hole (SMBH) were estimated. The UKIDSS galaxy samples around the AGNs were obtained using the virtual observatory. The scale length of AGN-galaxy cross-correlation for all of the samples is measured to be $r_0 = 5.8^{+0.8}_{-0.6} h^{-1} \text{Mpc}$ (for the fixed slope parameter $\gamma = 1.8$). We also derived a dependence of r_0 on the BH mass, M_{BH} , and found an indication of an increasing trend of r_0 at $M_{\text{BH}} > 10^8 M_{\odot}$. It is suggested that the growth of SMBHs is mainly driven by interactions with the surrounding environment for $M_{\text{BH}} > 10^8 M_{\odot}$. On the other hand, at $M_{\text{BH}} < 10^8 M_{\odot}$, we did not find the BH mass dependence. This would imply that for less massive BHs, the mass growth process can be different from that for massive BHs.

Refereed Publications

- **Astropy: A community Python package for astronomy**
Astropy Collaboration
Astronomy & Astrophysics, Volume 558, id.A33, 9 pp. (2013).
- **Characterization of the gaseous companion κ Andromedae b. New Keck and LBTI high-contrast observations**
Bonnefoy, M.; Currie, T.; Marleau, G.-D.; et al.
Astronomy & Astrophysics, Volume 562, id.A111, 20 pp. (2014).
- **The green valley is a red herring: Galaxy Zoo reveals two evolutionary pathways towards quenching of star formation in early- and late-type galaxies**
Schawinski, Kevin; Urry, C. Megan; Simmons, Brooke D.; Fortson, Lucy; Kaviraj, Sugata; Keel, William C.; Lintott, Chris J.; Masters, Karen L.; Nichol, Robert C.; Sarzi, Marc; Skibba, Ramin; Treister, Ezequiel; Willett, Kyle W.; Wong, O. Ivy; Yi, Suhyoung K.
Monthly Notices of the Royal Astronomical Society, Volume 440, Issue 1, p.889-907. (2014)
- **Empirical Links between XRB and AGN Accretion Using the Complete $z < 0.4$ Spectroscopic CSC/SDSS Catalog**
Trichas, Markos; Green, Paul J.; Constantin, Anca; Aldcroft, Tom; Kalfountzou, Eleni; Sobolewska, Malgosia; Hyde, Ashley K.; Zhou, Hongyan; Kim, Dong-Woo; Haggard, Daryl; Kelly, Brandon C.
The Astrophysical Journal, Volume 778, Issue 2, article id. 188, 12 pp. (2013).
- **Cepheids in open clusters: an 8D all-sky census**
Anderson, Richard I.; Eyer, Laurent; Mowlavi, Nami
Monthly Notices of the Royal Astronomical Society, Volume 434, Issue 3, p.2238-2261 (2013).
- **Kepler-91b: a planet at the end of its life. Planet and giant host star properties via light-curve variations**
Lillo-Box, J.; Barrado, D.; Moya, A.; Montesinos, B.; Montalbán, J.; Bayo, A.; Barbieri, M.; Régulo, C.; Mancini, L.; Bouy, H.; Henning, T.
Astronomy & Astrophysics, Volume 562, id.A109, 19 pp. (2013).
- **X-shooter spectroscopy of young stellar objects. III. Photospheric and chromospheric properties of Class III objects**
Stelzer, B.; Frasca, A.; Alcalá, J. M.; Manara, C. F.; Biazzo, K.; Covino, E.; Rigliaco, E.; Testi, L.; Covino, S.; D'Elia, V.
Astronomy & Astrophysics, Volume 558, id.A141, 16 pp. (2013).
- **An in-depth study of HD 174966 with CoRoT photometry and HARPS spectroscopy. Large separation as a new observable for δ Scuti stars**
García Hernández, A.; Moya, A.; Michel, E.; Suárez, J. C.; Poretti, E.; Martín-Ruiz, S.; Amado, P. J.; Garrido, R.; Rodríguez, E.; Rainer, M.; Uytterhoeven, K.; Rodrigo, C.; Solano, E.; Rodón, J. R.; Mathias, P.; Rolland, A.; Auvergne, M.; Baglin, A.; Baudin, F.; Catala, C.; Samadi, R.
Astronomy & Astrophysics, Volume 559, id.A63, 14 pp. (2013).
- **The stellar mass-size relation for the most isolated galaxies in the local Universe**
Fernández Lorenzo, M.; Sulentic, J.; Verdes-Montenegro, L.; Argudo-Fernández, M.
Monthly Notices of the Royal Astronomical Society, Volume 434, Issue 1, p.325-335 (2013).

- Red bulgeless galaxies in SDSS DR7. Are there any AGN hosts?
Coelho, B.; Antón, S.; Lobo, C.; Ribeiro, B.
Monthly Notices of the Royal Astronomical Society, Volume 436, Issue 3, p.2426-2434 (2013).
- KIC 3858884: a hybrid δ Scuti pulsator in a highly eccentric eclipsing binary
Maceroni, C.; Lehmann, H.; da Silva, R.; Montalbán, J.; Lee, C.-U.; Ak, H.; Deshpande, R.; Yakut, K.; Debosscher, J.; Guo, Z.; Kim, S.-L.; Lee, J. W.; Southworth, J.
Astronomy & Astrophysics, Volume 563, id.A59, 17 pp. (2014).
- The Millennium Run Observatory: first light
Overzier, R.; Lemson, G.; Angulo, R. E.; Bertin, E.; Blaizot, J.; Henriques, B. M. B.; Marleau, G.-D.; White, S. D. M.
Monthly Notices of the Royal Astronomical Society, Volume 428, Issue 1, p.778-803 (2013).
Note: There are a number of papers that cite the GAVO interface for Millenium.
- WINGS Data Release: a database of galaxies in nearby clusters
Moretti, A.; Poggianti, B. M.; Fasano, G.; Bettoni, D.; D'Onofrio, M.; Fritz, J.; Cava, A.; Varela, J.; Vulcani, B.; Gullieuszik, M.; Couch, W. J.; Omizzolo, A.; Valentinuzzi, T.; Dressler, A.; Moles, M.; Kjærgaard, P.; Smareglia, R.; Molinaro, M.
Astronomy & Astrophysics, Volume 564, id.A138, 11 pp. (2014).
- Measuring mean densities of δ Scuti stars with asteroseismology. Theoretical properties of large separations using TOUCAN
Suárez, J. C.; García Hernández, A.; Moya, A.; Rodrigo, C.; Solano, E.; Garrido, R.; Rodón, J. R.
Astronomy & Astrophysics, Volume 563, id.A7, 11 pp. (2014).
- Proper motions of young stars in Chamaeleon. II. New kinematical candidate members of Chamaeleon I and II
López Martí, Belén; Jiménez-Esteban, Francisco; Bayo, Amelia; Barrado, David; Solano, Enrique; Bouy, Hervé; Rodrigo, Carlos
Astronomy & Astrophysics, Volume 556, id.A144, 11 pp. (2013).
- Kepler observations of very low-mass stars
Martín, E. L.; Cabrera, J.; Martioli, E.; Solano, E.; Tata, R.
Astronomy & Astrophysics, Volume 555, id.A108, 11 pp. (2013).

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

18-23 May 2014 - IVOA Interoperability Meeting

ESAC, Villanueva de la Cañada, Madrid, Spain

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.

9-11 July 2014 - Gaia data visualization workshop

University Observatory, Vienna, Austria

The main goal of the Gaia data visualization workshop is to bring together astronomers, experts in data visualization, and researchers in other fields dealing with the visualization of large data bases and discuss how to tackle some of the challenging issues faced by Gaia data visualization.

25-29 Aug 2014- Astroinformatics 2014

Center for Mathematical Modeling (CMM), University of Chile, Valparaiso, Chile

5-9 October 2014 - ADASS XXIV

Calgary, Canada

10-12 October 2014 - IVOA Interoperability Meeting

Banff, Alberta, Canada

12-14 November 2014 - 2014 Conference on Big Data from Space (BiDS '14)

ESRIN, Frascati, Italy

This conference aims to bring together researchers, engineers, users in the area of Big Data in the Space sector. The focus is on the whole data lifecycle, ranging from data acquisition by spaceborne and ground-based sensors to data management, analysis and exploitation in the domains of Earth Observation, Space Science, Space Engineering, Space Weather, etc.

8-10 December 2014 - .Astronomy 6

Adler Planetarium, Chicago, Illinois, USA

.Astronomy (pronounced 'dot-astronomy') aims to bring together an international community of astronomy researchers, developers, educators and communicators to showcase and build web-based projects, from outreach and education to research tools and data analysis.

For Astronomers



Getting Started / Using the VO
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IVOA newsletter / VO for Students
& Public



For Deployers/Developers



Intro to VO Concepts /
IVOA Standards / Guide to
Publishing in the VO / Technical
Glossary



For Members



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Mailing Lists / IVOA Roadmap



