

# ASTERICS VO Schools

Jenny Sorce & Ada Nebot

Observatoire Astronomique de Strasbourg

Centre de Données astronomiques de Strasbourg



# Astronomy ESFRI & Research Infrastructure Cluster

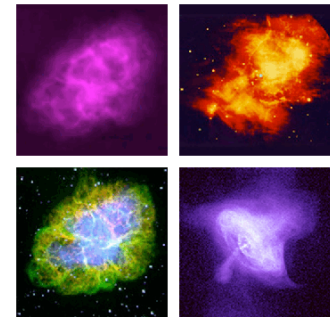
- Aims:

- Address synergies & challenges shared by ESFRI facilities.
- Bring together astronomy, astrophysics & particle astrophysics.



- Objectives:

- Support & accelerate & enhance ESFRI facilities.
- Interoperate as multi-wavelength & multi-messenger facility.
- Manage, process & exploit the huge datasets.



# Astronomy ESFRI & Research Infrastructure Cluster

- How:

- New methodologies & prototype systems.
- Access to data via VO.
- Dissemination.



- Why:

- Increase telescope impact.
- Encourage (re-)use of data in new & novel ways.



# Astronomy ESFRI & Research Infrastructure Cluster

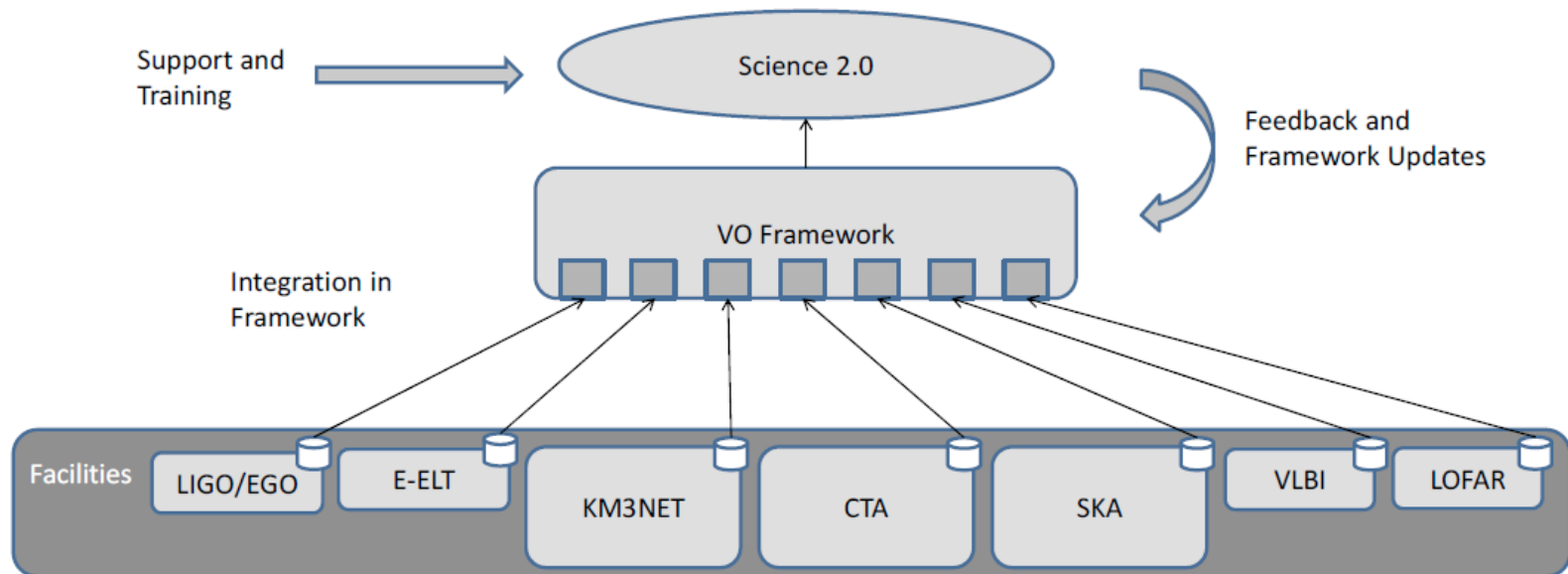
Several WPs / Several missions



- DADI
- DECS
- OBELICS
- CLEOPATRA

# DADI: Data Access, Discovery and Interoperability

- **Schools**
- Workshops
- On-line training materials (EuroVO)
- Technical Forums
- Data providers forum



# Schools: Goal & Method

- Goal:
  - Train to use VO tools & services.
  - Gather feedback & requirements.
- Methodology:
  - Tutorials based on real science cases.
  - User's own science case.
  - Feedback form.



# Schools: Attendance

- 50 persons (Trainees 2/3 & Tutors 1/3) from:

- VO partners
- ESFRI partners
- External countries



# Tutorials

- Developed by partners and tested upstream



- Large variety:
  - The CDS tutorial
  - Discovery of brown dwarfs (SDSS & 2MASS)
  - Stellar physical parameters
  - Multi-instrument/wavelength study of high energy sources
  - Exploring Gaia
  - Handling gravitational-wave sky maps
  - ...



# Tutorials

<http://www.euro-vo.org/>



Science

Home

Science

- Software
- Scientific Tutorials
- Scientific Papers
- Advisory Committee
- Euro-VO Mailing List

EDUCATION

Data Centres

- IVOA 'VO Publishing'

Technical

- IVOA Standards
- Registries

News

About

- Contacts

The EURO-VO current project: [EuroVO-CoSADIE](#) Past projects: [VOTECH](#) [EuroVO-DCA](#) [EuroVO-AIDA](#) [EuroVO-ICE](#)

## Scientific Tutorials

### ■ [Abell 1656: The Coma Cluster of Galaxies](#) [Astérics] for ASTERICS, Jan 2017]

This tutorial uses the advanced VO functionalities of Aladin (interactive sky atlas), TOPCAT (tools to work on catalogs) and Cassis (interactive spectrum analyzer) to study interactively the Coma cluster of galaxies. The user can visualize the Coma cluster of galaxies and build a subset of these galaxies with Aladin. With TOPCAT, they can analyze this subset. Finally, they can study an HST power spectrum with Cassis.

### ■ [The CDS tutorial](#) [Astérics] ASTERICS VO School, Nov 2016, updated Jan 2017]

This tutorial describes the basis of the VO program hosted at CDS. The three major VO programs are described: SIMBAD (astronomical database), VizieR (catalog service) and Aladin (interactive sky atlas). The user gets familiar with the programs 1) searching for the galaxy NGC4039 through the CDS portal to get direct access to SIMBAD, VizieR and Aladin, 2) comparing the sky coverage between SDSS and GALEX surveys using Aladin and 3) selecting interacting galaxies with Aladin.

### ■ [Discovery of Brown Dwarfs mining the 2MASS and SDSS databases](#) [Astérics] ASTERICS VO School, Nov 2016]

This tutorial uses the advanced VO functionalities of Aladin (interactive sky atlas), TOPCAT (tools to work on catalogs) and STILTS to find brown dwarfs in 2MASS and SDSS surveys using three different methods. The user learns about the filtering, cross-matching and visualization functions of Aladin and TOPCAT as well as about the implementation of scripts for Aladin and STILTS to repeat several times the same steps leading to the identification of the brown dwarfs in these surveys.

### ■ [Determination of stellar physical parameters using VOSA](#) [Astérics] ASTERICS VO School, Nov 2016]

This tutorial uses the advanced VO functionalities of VOSA (VO Sed Analyzer) and TOPCAT to determine empirically the masses and radii of stars surrounded by planets. The user needs to register to get access to the functionalities of VOSA (online tool). They can then upload a list of objects to study, build their SEDs and analyze them (by fitting models). Using the interoperability between VOSA and TOPCAT, the user can compare the empirical values obtained with VOSA to those published in papers.

# Tutorials

- **Handling gravitational-wave sky maps for EM-followUP observations** [  **ASTERICS VO School, Nov 2016** ]

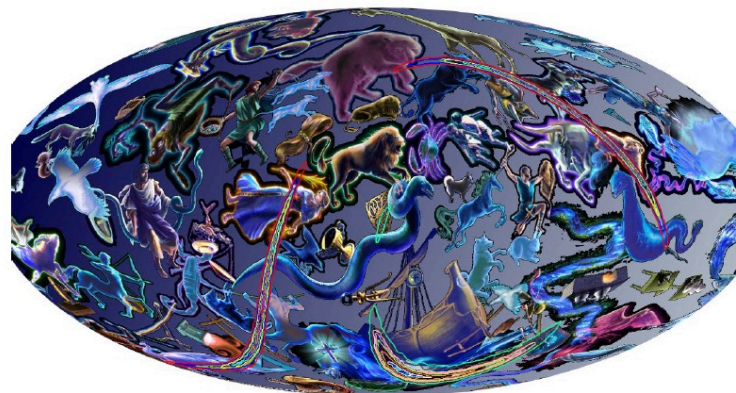
This tutorial uses the functionalities of Aladin to visualize probability sky maps. It also makes extensive use of the MOC (Multi-Order Coverage) capabilities of Aladin to query a given region of the sky and access the catalogs with information in that region via the interoperability with VizieR. Finally the additional interoperability with TOPCAT permits sending the data available in that region to the latter for further studies.

## Handling gravitational-wave sky maps for EM-followUP observations

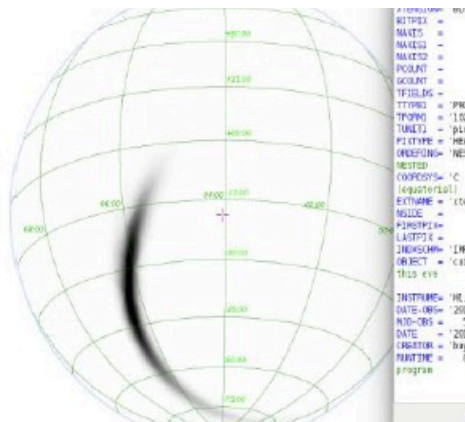
---

Second ASTERICS Virtual Observatory School

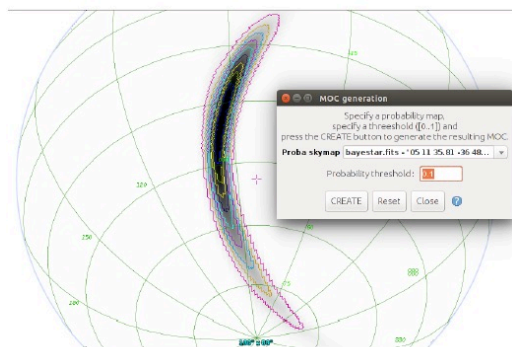
G. Greco, E. Chassande- Mottin, M. Branchesi and many others



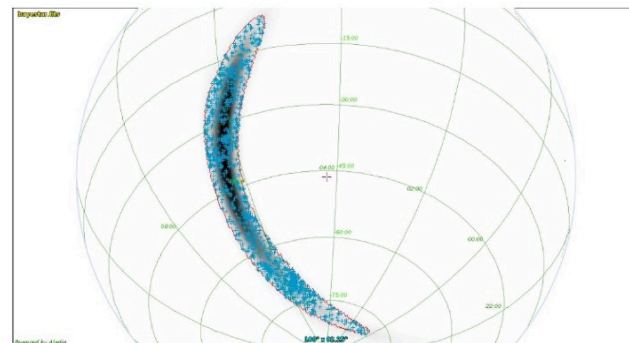
# Tutorials



Load probability sky map with Aladin



MOCs with Aladin  
 (Multi-Order Coverage map)



Catalogs from VizieR.  
 Subsets with TopCAT  
 (Interoperability)

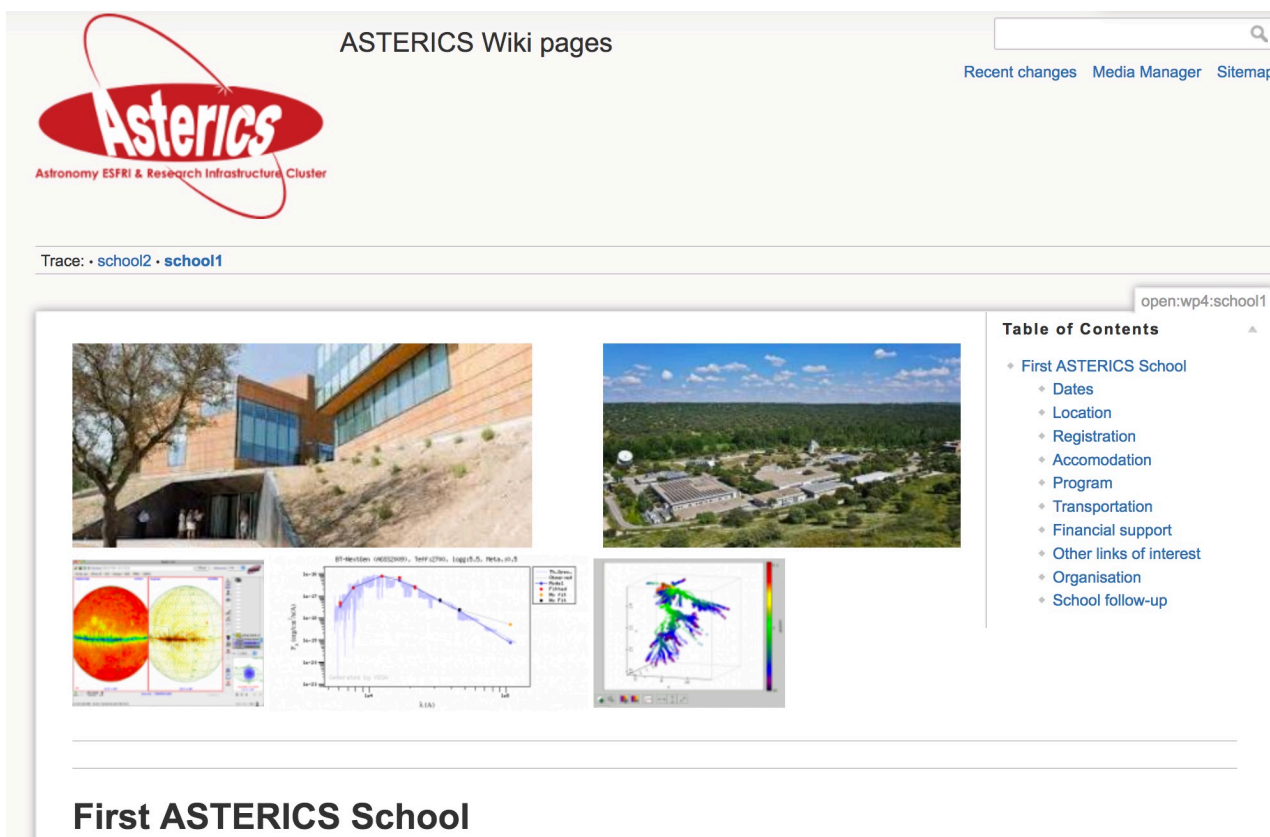
# Tutorials

- Regularly updated & developed:
  - Feedback: “Exploring Gaia with TopCAT”
  - Updates on tools & services: “the CDS tutorial”
  - Data availability: “the Multi-instrument/wavelength study of high energy sources”
  - New: “Handling gravitational wave sky-maps”



# Schools: 1 /yr – 3 days

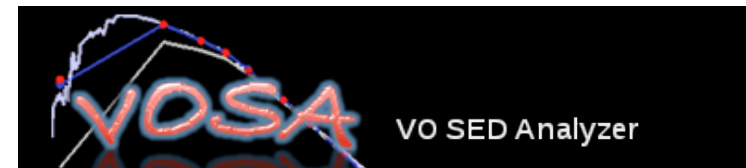
A dedicated website <https://www.asterics2020.eu>



The screenshot shows a web browser displaying the 'First ASTERICS School' page on the ASTERICS Wiki. The page features the ASTERICS logo at the top left, a search bar at the top right, and navigation links for 'Recent changes', 'Media Manager', and 'Sitemap'. Below the logo, there is a breadcrumb trail: 'Trace: • school2 • school1'. The main content area is titled 'open:wp4:school1' and contains a 'Table of Contents' sidebar on the right. The sidebar lists the following sections: 'First ASTERICS School', 'Dates', 'Location', 'Registration', 'Accommodation', 'Program', 'Transportation', 'Financial support', 'Other links of interest', 'Organisation', and 'School follow-up'. The main content area displays a grid of images and plots, including a photograph of a modern building, an aerial view of a campus, two circular astronomical data plots, a line graph showing a peak, and a 3D visualization of data points.

# Schools: 3 days ...

- Day 1:
  - Introduction to ASTERICS & VO.
  - Hands-on tutorials based on real science cases.



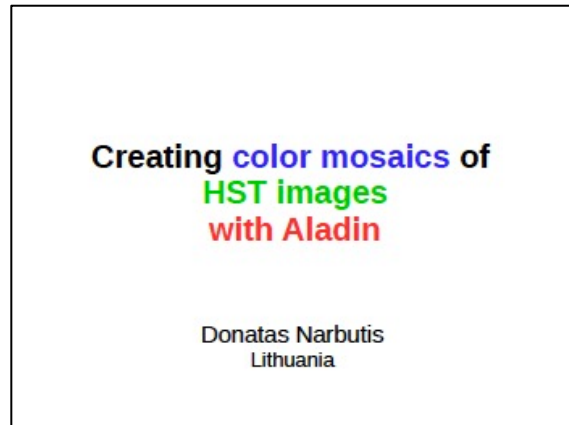
# Schools: 3 days ...

- Day 2:
  - Hands-on tutorials based on real science cases.
  - Treasure Hunt = addressing small challenges.



# Schools: 3 days ...

- Day 3:
  - Users' own Science case
  - Presentations by "users"
  - Feedback





# A total of 4 VO Schools

- Madrid: 15-17 Dec. 2015 ✓
- Strasbourg: 15-17 Nov. 2016 ✓
- Madrid: 21-23 Nov. 2017 in prep.
- Strasbourg: Nov./Dec. 2018



# Fullfilled Goal



**Justyn CampbellWhite** @justyncw · Nov 16

Trying not to think about how much time I could have saved using TOPCAT. It will make research tasks much easier from now on! [#asterics2016](#)



1



- Trainees become ambassadors & tutors



# Thank you

# xièxie



*Astronomy ESFRI & Research Infrastructure Cluster*  
ASTERICS - 653477



## Some acronyms:

- ESFRI: European Strategy Forum on Research Infrastructures
- DADI: Data Access, Discovery and Interoperability
- DECS: Dissemination, Engagement and Citizen Science
- OBELICS: OBservatory E-environments Linked by common ChallengeS
- CLEOPATRA: Connecting Locations of ESFRI Observatories and Partners in Astronomy for Timing and Real-time Alerts

## Others:

- ESFRI facilities: SKA, CTA, KM3Net & E-ELT
- WP4 (DADI) partners: ASTRON, KM3Net, EGO/VIRGO, CNRS/CDS, CNRS/LUTH (CTA), INAF, INTA, UEDIN, and UHEI.