Welcome

Introductory talks

- 09:30 - 10:30 Introductory talks
  - 09:30 - 09:35 - Welcome & logistics (Ada Nebot)
  - 09:35 - 09:50 - Observatory of Strasbourg (Pierre-Alain Duc)
  - 09:50 - 10:05 - The ASTERICS project (Mark Allen)
  - 10:05 - 10:30 - Introduction to the VO and the school (Ada Nebot)

Introduction to the Virtual Observatory and the School

Ada Nebot

Observatoire Astronomique de Strasbourg, Strasbourg, France

Astronomical data

HD	V [mag]	$B-V$ [mag]	$b-y$ [mag]	A_V [mag]	$v \sin i$ [km s^{-1}]	$T_{\rm eff}$ [K]	$\log g$(phot) [dex]	M_V [mag]	$\log L_*/L_\odot$
319	5.93	0.141	0.079	0.004	60	8020(135)	3.74(8)	+1.27(19)	1.45(8)
6870	7.49	0.246	0.164	0.000	165	7330(102)	3.84(11)	+2.29(42)	1.02(17)
7908	7.29	0.272	0.192	0.000		7145(87)	4.10(12)	+2.60(18)	0.90(7)
11413	5.94	0.147	0.105	0.004	125	7925(124)	3.91(21)	+1.49(10)	1.35(4)
13755	7.84	0.318	0.181	0.000		7080(161)	3.26(10)	+0.93(10)	1.57(4)
15165	6.71	0.333	0.191	0.010	90	7010(167)	3.23(10)	+1.12(16)	1.50(6)
23392	8.26	0.020	0.014	0.094		9805(281)	4.35(9)	+1.43(30)	1.45(12)
24472	7.09	0.304	0.214	0.003		6945(131)	3.81(16)	+2.14(11)	1.09(5)
30422	6.19	0.190	0.101	0.014	135	7865(108)	4.00(20)	+2.35(1)	1.01(1)
31295	4.65	0.085	0.044	0.063	115	8920(177)	4.20(1)	+1.66(22)	1.32(9)
35242	6.35	0.122	0.068	0.042	90	8250(103)	3.90(14)	+1.75(22)	1.26(9)
36726	8.84	0.086	0.043	0.202		9515(223)	4.36(10)	+1.74(30)	1.32(12)
42503	7.46	0.176	0.130	0.084		7680(282)	3.10(10)	−0.03(4)	1.96(2)

of the star, such that it can fuel, through HeII-HeIII ionization, the observed pulsations in this type of stars. Using state-of-the-art

Wavelength [Å]

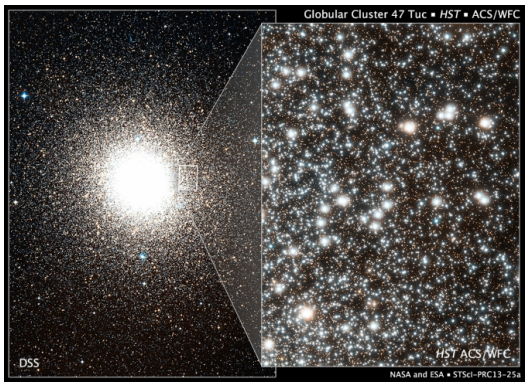
Astronomical data are diverse

Astronomy today

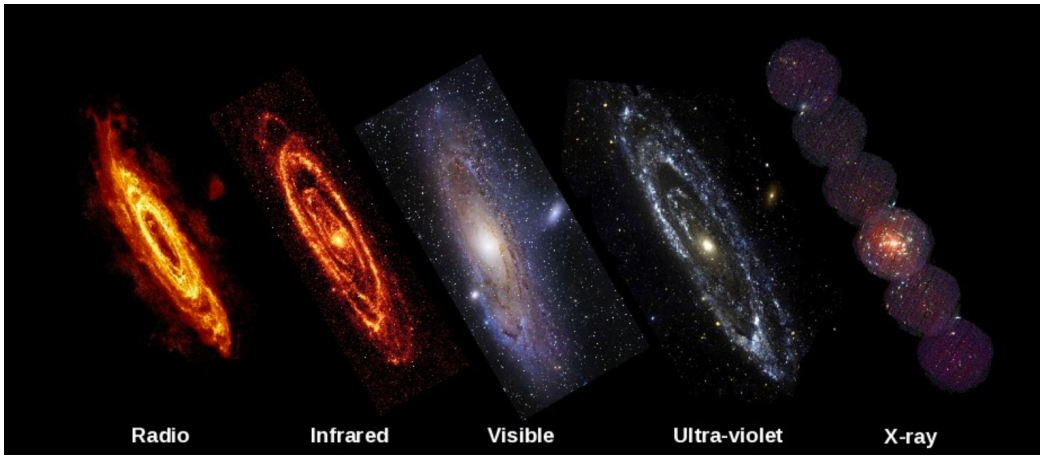
More data at our disposal than at any other time in history:

- Survey telescopes

- Better detectors

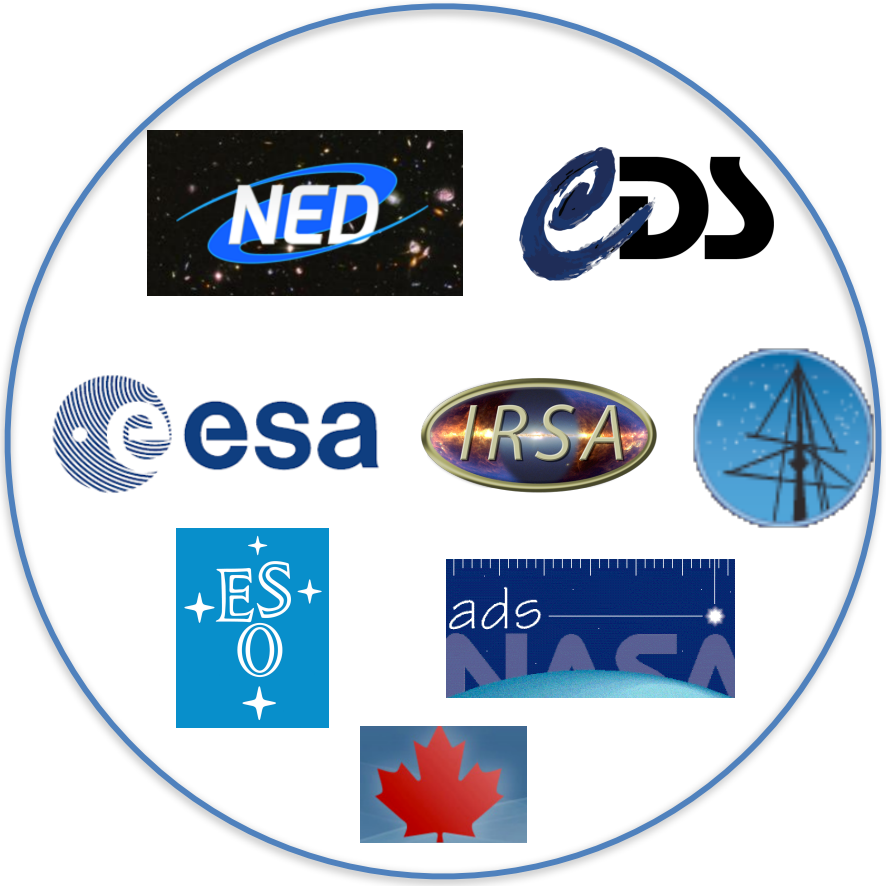


- Multi-wavelength studies



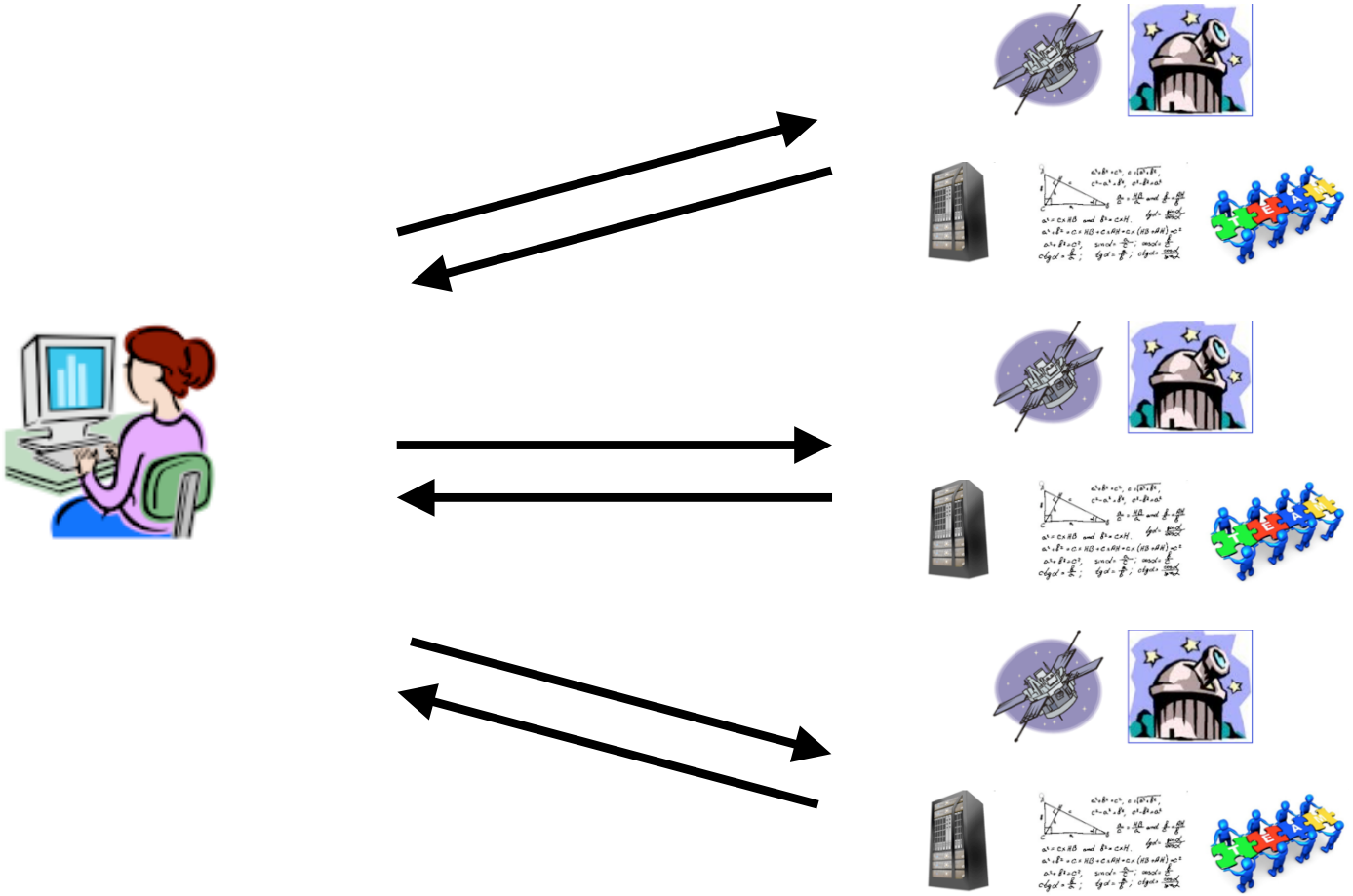
➡ Production of huge amounts of data.

Astronomical archives and data centers



Astronomical archives are heterogeneous

Accessing data



Different methods to access data on different astronomical archives

The Virtual Observatory

Astronomical data and archives are heterogeneous

homogenisation

definition of standards

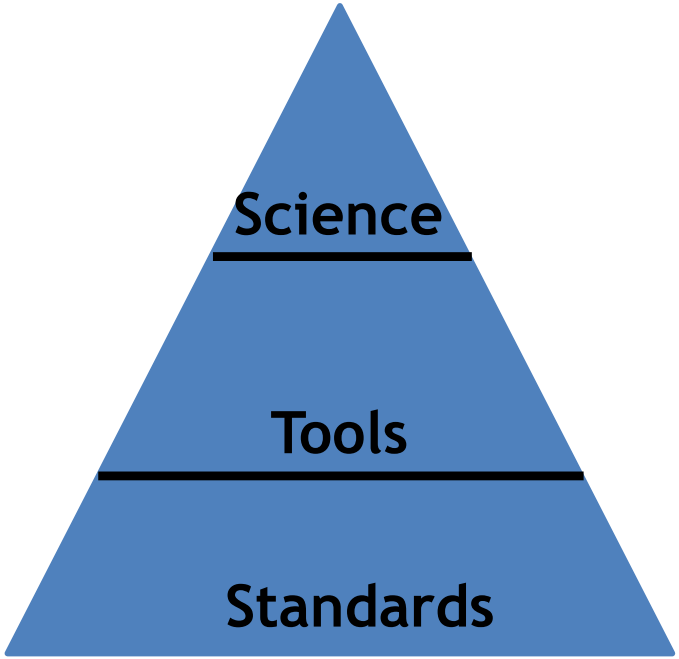
"The Virtual Observatory (VO) is the vision that astronomical datasets and other resources should work as a seamless whole."

International Virtual Observatory Alliance

Goal: Easy and efficient access and analysis of the information hosted in astronomical archives.

The Virtual Observatory

- Allows astronomers to interrogate multiple data centres in a seamless and transparent way.
- Provides new powerful analysis and visualisation tools within that system.
- Gives data centers a standard framework for publishing and delivering services using their data.



VO enabling science

- part of Astronomer's everyday tool kit
- being used in innovative ways
- 'VO' not well cited, but tools and services are!

Science with the VO

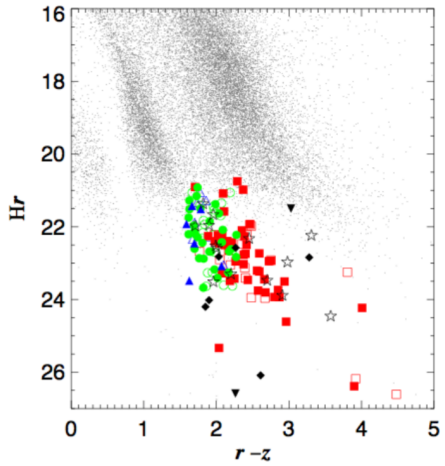
New ultracool subdwarfs identified in large-scale surveys using Virtual Observatory tools ★

II. SDSS DR7 vs UKIDSS LAS DR6, SDSS DR7 vs UKIDSS LAS DR8, SDSS DR9 vs UKIDSS LAS DR10, and SDSS DR7 vs 2MASS

N. Lodieu[1,2], M. Espinoza Contreras[1,2], M. R. Zapatero Osorio[3], E. Solano[4,5], M. Aberasturi[4,5], E. L. Martín[3], C. Rodrigo[4,5]

ABSTRACT

Aims. We aim at developing an efficient method to search for late-type subdwarfs (metal-depleted dwarfs with spectral types ≥ M5) to improve the current statistics. Our objectives are: improve our knowledge of metal-poor low-mass dwarfs, bridge the gap between the late-M and L types, determine their surface density, and understand the impact of metallicity on the stellar and substellar mass function.



- Cross-match
- Stilts
- Aladin
- Topcat

Science with the VO

A search for new hot subdwarf stars by means of Virtual Observatory tools II

E. Pérez-Fernández [1,2⋆], A. Ulla[2], E. Solano[3,4], R. Oreiro[5] and C. Rodrigo[3,4]

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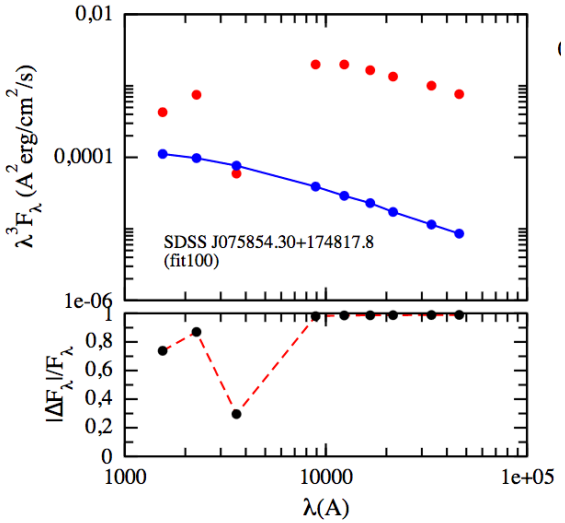
[2] *Departamento de Física Aplicada, Universidade de Vigo, Campus Lagoas-Marcosende, 36310 Vigo, Spain*
[3] *Departamento de Astrofísica, Centro de Astrobiología (INTA-CSIC), PO Box 78, E-28691 Villanueva de la Cañada (Madrid)*
[4] *Spanish Virtual Observatory*
[5] *Instituto de Astrofísica de Andalucía (IAA-CSIC), Glorieta de la Astronomía, s/n, 18008 Granada.*



- VOSA

Science with the VO

Monthly Notices of the ROYAL ASTRONOMICAL SOCIETY

Mon. Not. R. Astron. Soc. **406,** 1595–1608 (2010) doi:10.1111/j.1365-2966.2010.16812.x

Scalelength of disc galaxies

Kambiz Fathi,[1,2★] Mark Allen,[3] Thomas Boch,[3] Evanthia Hatziminaoglou[4] and Reynier F. Peletier[5]

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[2] *Oskar Klein Centre for Cosmoparticle Physics, Stockholm University, 106 91 Stockholm, Sweden*
[3] *Observatoire de Strasbourg, UMR 7550, Strasbourg 67000, France*
[4] *European Southern Observatory, Karl-Schwarzschild-Str. 2, 85748 Garching bei München, Germany*
[5] *Kapteyn Astronomical Institute, Postbus 800, 9700 AV Groningen, the Netherlands*

ABSTRACT

We have derived disk scale lengths for 30374 non-interacting disk galaxies in all five SDSS bands. Virtual Observatory methods and tools were used to define, retrieve, and analyse the images for this unprecedentedly large sample classified as disk/spiral galaxies in the LEDA catalogue. Cross correlation of the SDSS sample with the LEDA

- Aladin
- Topcat

To keep in mind

- VO: Federation of data centres sharing data through a common set of standards.
- VO tools:
  - Not a “does-it-all” software
  - Different tools for different problems
  - VO science: A reality since about 10 years ago.
- What is VO for?
  - For programmers, for data centres, for astronomers, for big data projects.
  - For educators, amateurs, general public.

Learning how

- Workshops and schools
- On-line training materials - EuroVO
- From your colleagues

The School

- Goal
  - Teach participants on how to efficiently use the VO tools for their own research.
  - Gather your feedback and requirements on VO tools and services.

- Methodology:
  - Tutorials based on real science cases.
  - Feedback form.

The School: participation

- 32 participants + 11 tutors
- Countries:
  - The VO partners
  - The ESFRI partners
  - External countries
- Scientific profile: M.Sc., PhD, Postdoc , Senior

The School: the schedule

- 3 days: 2 dedicated to tutorials + 1 to your own project

DAY 1: 20 November 2018

- 11:00 - 12:45 Tutorial #1 (1h45m).
  - Title: The CDS tutorial. The CDS tutorial.
  - VO-tools: Simbad, VizieR, Aladin
  - Tutor: **K. Lutz** + A. Nebot (group 1) / **S. Derriere** + T. Boch (group 2)
- 12:45 - 14:00 LUNCH
- 14:00 - 15:45 Tutorial #2 (1h45m)
  - Title: Determination of stellar physical parameters using VOSA
  - Introduction to VOSA and the science case
  - VO-tools: VOSA, TOPCAT
  - Tutor: **F. Jiménez** + A. Nebot (group 1) / **M. Cortés** + G. Greco (group 2)
- 15:45 - 16:00 Coffee break
- 16:00 - 18:00 Tutorial #3 (2h00m)
  - Title: Accessing and cross matching of big data sets with ADQL
  - VO-tools: TOPCAT (TAP/ADQL)
  - Tutor: **H. Heinl** + M. Taylor (group 1) / **M. Demleitner** + S. Derriere (group 2)

The School: the schedule

DAY 2: 21 November 2018

- 09:00 - 10:45 Tutorial #4 (group 1) / Tutorial #5 (group 2) (1h45m).
- Tutorial #4
  - Title: Exploring Gaia data with TOPCAT and STILTS
  - VO-tools: TOPCAT, STILTS
  - Tutor: **M. Taylor** + H. Heinl (group 1)
- Tutorial #5
  - Title: Electromagnetic follow-up of gravitational-wave events
  - VO-tools: Aladin, TOPCAT, GWsky
  - Tutor: **G. Greco** + C. Bot (group 2)

- 10:45 - 11:15 Coffee break

- 11:15 - 13:00 Tutorial #5 (group 1) / Tutorial #4 (group 2)(1h45m)
- Tutorial #5
  - Title: Electromagnetic follow-up of gravitational-wave events
  - VO-tools: Aladin, TOPCAT, GWsky
  - Tutor: **G. Greco** + C. Bot (group 1)

- Tutorial #4
  - Title: Exploring Gaia data with TOPCAT and STILTS
  - VO-tools: TOPCAT, STILTS
  - Tutor: **M. Taylor** + H. Heinl (group 2)

- 14:00 - 16:00 Tutorial #6 (2h00m)
  - Title: Advanced usage of HiPS & MOCs
  - VO-tools: Aladin, TOPCAT
  - Tutor: **S. Derriere** + K. Lutz (group 1) / **C. Bot** + T. Boch (group 2)

- 16:00 - 16:30 Coffee break

- 16:30 - 17:30 Treasure Hunt (1h)

- 17:30 - 17:45 Preparation of participants project (15 min)

Dinner

The School: the schedule

DAY 3: 22 November 2018

- 09:00 - 10:45 Participants project
- 10:45 - 11:15 Coffee break
- 11:15 - 13:00 Participants project (cont.)
- 13:00 - 14:00 Lunch
- 14:00 - 15:45 Participants project (cont.)
- 15:45 - 16:15 Feedback
- 16:15 - 16:30 Wrap-up

The School: groups

- Two rooms in same building
  - Seminar room (here) – Room 1
  - Meeting room (downstairs – follow the signs) – Room 2
- Tutors need to check in which room your tutorial is
- Division into two groups:
  - Group 1: **last name A – G** Room 1
  - Group 2: **last name H – Z** Room 2

The School: groups

4th ASTERICS VIRTUAL OBSERVATORY SCHOOL
20-22 NOVEMBER 2018
PROGRAM

WIFI
user: conf-voschool18
pwd: voschool18

	GROUP 1 (Room 1)	GROUP 2 (Room 2)
11:00 — 12:45	TUTORIAL 1 (K. Lutz + A. Nebot)	TUTORIAL 1 (S. Derriere + T. Boch)
12:45 — 14:00	**LUNCH**	
14:00 — 15:45	TUTORIAL 2 (F. Jimenez + A. Nebot)	TUTORIAL 2 (M. Cortes + G. Greco)
15:45 — 16:00	**COFFEE BREAK**	
16:00 — 18:00	TUTORIAL 3 (H. Heinl + M. Taylor)	TUTORIAL 3 (M. Demleitner + S. Derriere)

Internet access

osiris
login : **conf-voschool18**
passwd : **voschool18**

#VOSchool4