

Ciencia Abierta en la práctica

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Marzo 2022



Instituto de Astrofísica de Andalucía, IAA-CSIC



Open Science



Visual Paradigm Online Diagrams Express Edition

Public vs Findable

24

ERNESTO GARCÓN VALDÉS.

- Vitoria, Francisco de (1974): *Relaciones del estado de los indios y del derecho de la guerra*, México.
Walzer, Michael (1977): *Just and Unjust Wars*, Nueva York.
Walzer, Michael (1980): "The Moral Standing of States: A Response to Four Critics" en *Philosophy & Public Affairs*, vol 9, Nº 3.
Wolff, Christian (1749): *Jus gentium methodo scientifica pertractatum*.

ABSTRACT

After rejecting the analogy between personal autonomy and state sovereignty and questioning the strong relationship usually believed to exist between the right to self-determination of a people and the prohibition of any type of intervention, criteria are proposed which permit to identify some cases where intervention in the internal affairs of other countries are ethically permitted. An ethically justifiable intervention must —just like cases of legal paternalism within a state— satisfy two necessary and jointly sufficient conditions: 1. The intervened country must be unable to overcome on its own some real ill, due to a basic incompetence in the area where the intervention takes place, and 2. the intervention may not be aimed at manipulating the intervened country for the benefit of the intervening power. Both conditions are not easily satisfied. This explains the difficulty of justifying interventions, but it does not permit to conclude that they are always unjustifiable.

Scanned PDF

Is it Findable?

- The content can not be indexed by the web searchers
- To find it you need
 - the url
 - good description in the web page in which is attached
- Data / Text can not be extracted (in an easy way)

... and Accessible?



Findable vs Accessible

The screenshot shows a web browser window with the URL amiga.iaa.es/p/5-amiga-data.htm. The page title is "AMIGA" and the subtitle is "Analysis of the Interstellar Medium of Isolated Galaxies". The header includes links to Slack, it-support, and SPSRC User Docs, and a zoom level of 120%.

ASCII files

Evolution of compact groups from intermediate to final stages: A case study of the HI content of HCG 16
M. G. Jones, L. Verdes-Montenegro, A. Damas-Segovia, S. Borthakur, M. Yun, A. del Olmo, J. Perea, J. Román, S. Luna, D. Lopez Gutierrez, B. Williams, F. P. A. Vogt, J. Garrido, S. Sanchez, J. Cannon and P. Ramírez-Moreta.

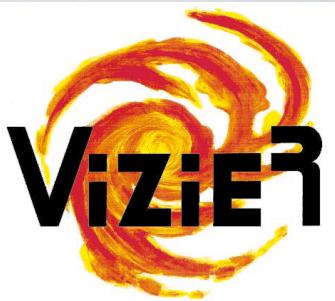
ASCII Table

	16 a NGC835	2 09 24.6	-10 08 09	Sab	4073	76	10.27	0.05
ReadMe	16 b NGC833	2 09 20.8	-10 07 59	SABa	3864	89	10.14	0.05
table1.dat	16 c NGC838	2 09 38.5	-10 08 48	S0a	3849	69	10.11	0.02
table2.dat	16 d NGC839	2 09 42.9	-10 11 03	S0a	3874	87	9.97	0.02
table3.dat	NGC848	2 10 17.6	-10 19 17	SBab	4045	89	10.09	0.04
	PGC8210	2 09 06.0	-10 19 13	Sc	3972	72	9.37	0.18

The AMIGA sample



Findable vs Accessible



https://vizier.cds.unistra.fr/viz-bin/VizieR

jupyterHub IAA Comenzar a usar Fir... Slack | it-support | ... SPSRC User Docs

Portal Simbad VizieR Aladin X-Match Other Help

VizieR

VizieR home · Photometry viewer · Query VizieR using TAP · X-match tables · Query images/spectra

Search Criteria

Find catalogs among 22043 available

Clear compact groups HI Find...

Expand search

Catalog, author's name, word(s) from title, description, etc.
e.g.: AGN, Veron, I/239, or bibcodes...

Search for catalogs by column descriptions (UCD)

Search for catalogs containing additional data

Search by Position across 24161 tables

Target Name (resolved by Sesame) or Position: Clear J2000 2 arcmin Go!

NB: The epoch used for the query is the original epoch of the table(s)

Target dimension: Radius Box size

More about VizieR

Wavelength Mission Astronomy

Radio	AKARI	Abundances
Millimeter	ANS	Ages
IR	ASCA	AGN
optical	BeppoSAX	Associations
UV	Cassini-Huygens	Asteroseismology
EUV	CGRO	Atomic_Data
X-ray	Chandra	Binaries:cataclysmic

~ 3 matching catalogs Find Catalogs

3 catalogs found

HCG HI-deficiency (Huchtmeier 1997)

J/A+A/325/473

J/A+A/325/473/table1 (c) Observational data (58 rows)

J/A+A/325/473/table2 (c)* Global parameters of Hickson compact groups of galaxies (Cat. VII/85) (75 rows)

Optical and HI data of 6 southern galaxy groups (Pompei+, 2007)

J/A+A/473/399

J/A+A/473/399/table1 (c) Salient parameters of six Southern Compact Groups of galaxies (6 rows)

J/A+A/473/399/table8 (c) Optical and HI measurements for individual member galaxies of each group (30 rows)

J/A+A/473/399/table9 Measured flux in the radio continuum from each of the group member galaxies and derived parameters (27 rows)

J/A+A/632/A78

J/A+A/632/A78/table1 (c) Summary of optical properties of HCG 16 galaxies (6 rows)

J/A+A/632/A78/table2 Summary of HI properties of HCG 16 galaxies (14 rows)

J/A+A/632/A78/table3 Gas masses and gas consumption timescale (4 rows)

J/A+A/632/A78/list (c) Information on datacube (1 rows)

Similar Catalogs 1997A&A...325..473H ReadMe+ftp

Similar Catalogs 2007A&A...473..399P ReadMe+ftp

cube/fits Similar Catalogs 2019A&A...632A..78J ReadMe+ftp

Query selected Tables Join selected Tables

(c) indicates tables which contain celestial coordinates

Findable vs Accessible



Simple Target | List Of Targets

Target Name (resolved by [Sesame](#)) or Position: J2000 2 arcmin Radius Box size
NB: The epoch used for the query is the original epoch of the table(s)

[cube/fits](#) | [Similar Catalogs](#) | [2019A&A...632A..78J](#) | [ReadMe+ftp](#)

X Y A case study of the HI content of HCG 16 (Jones+, 2019)
[Post annotation](#)

J/A+A/632/A78

1.J/A+A/632/A78/table1 Summary of optical properties of HCG 16 galaxies (6 rows)

[Submit](#) | [Reset All](#)

Simple Constraint | List Of Constraints

Query by [Constraints](#) applied on Columns (Output Order: + -)

Show	Sort	Column	Constraint	Explain (UCD)
<input type="checkbox"/>	<input type="radio"/>	recno		Record number assigned by the VizieR team. Should Not be used for identification. (meta.record)
<input checked="" type="checkbox"/>	<input type="radio"/>	HCG		(n) HCG number (VII/213) (meta.id)
<input checked="" type="checkbox"/>	<input type="radio"/>	m_HCG	(char)	[a-d] m_HCG member galaxy (VII/213) (meta.code.multip)
<input checked="" type="checkbox"/>	<input type="radio"/>	Name	(char)	Other common name of galaxy (meta.id;meta.main)
<input checked="" type="checkbox"/>	<input type="radio"/>	RAJ2000	"h:m:s"	(i) Right ascension (J2000) (pos.eq.ra;meta.main)
<input checked="" type="checkbox"/>	<input type="radio"/>	DEJ2000	"d:m:s"	(i) Declination (J2000) (pos.eq.dec;meta.main)
<input checked="" type="checkbox"/>	<input type="radio"/>	MType	(char)	Morphological type (from RC3) (src.morph.type)
<input checked="" type="checkbox"/>	<input type="radio"/>	HRV	km/s	Heliocentric radial velocity (from optical lines) (spect.dopplerVeloc;pos.heliocentric)
<input checked="" type="checkbox"/>	<input type="radio"/>	D25	arcsec	Major isophotal diameter at 25mag/arcsec ² (phys.angSize)
<input checked="" type="checkbox"/>	<input type="radio"/>	logLB	[Lsun]	B-band luminosity relative to solar (phys.luminosity/em.opt.B)
<input checked="" type="checkbox"/>	<input type="radio"/>	e_logLB	[Lsun]	Uncertainty in B-band luminosity (stat.error) Luminosity in Optical B band between 400 and 500 nm
<input checked="" type="checkbox"/>	<input type="radio"/>	Simbad	Simbad	ask the Simbad data-base about this object (meta.ref.url)

[ALL cols](#) | [Reset All](#) | [Clear](#)

(n) indicates a possible blank or NULL column

[\(i\) indexed column](#) | [Submit](#)



Findable vs Accessible



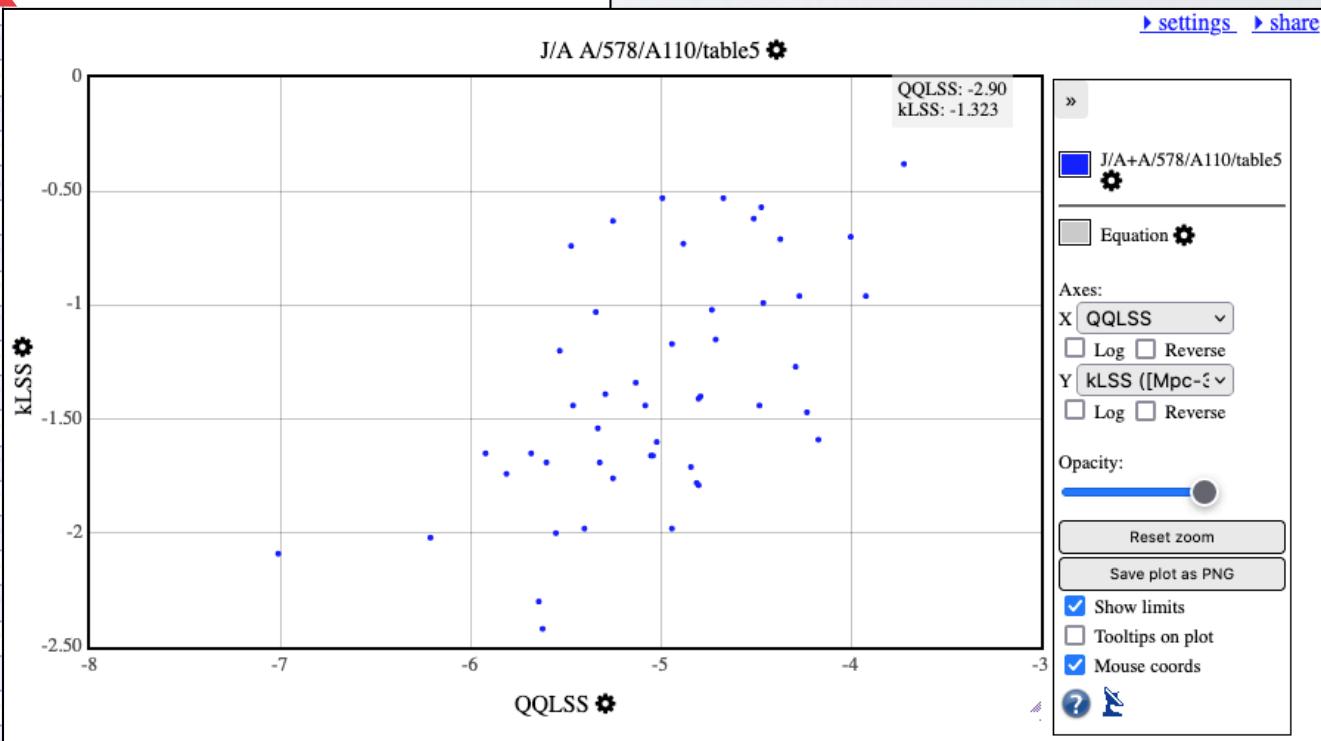
► Show constraint information

[J/A+A/578/A110/table5](#) Isolated galaxies, pairs and triplets (Argudo-Fernandez+, 2015) Post annotation 2015A&A...578A.110A ReadMe+ftp

Isolated pairs: relation with their local and large-scale environments (1240 rows)

[plot the output](#) [query using TAP/SQL](#)

Full	SIP	NLSS	f	dNN Mpc	kLSS [Mpc-3]	QQLSS	Op	Qratio
1	1	11	1	1.57	-1.03	-5.34	-2.28	1.00
2	2	42	0	1.67	-1.20	-5.53	-3.50	0.99
3	3	9	1	1.32	-1.79	-4.80	-1.25	1.00
4	4	17	1	2.13	-1.39	-5.29	1.52	1.00
5	5	23	1	1.38	-1.34	-5.13	-2.08	1.00
6	6	43	1	1.55	-0.96	-3.92	-2.54	0.96
7	7	34	1	1.34	-0.63	-5.25	-3.66	0.97
8	8	4	1	1.71	-1.98	-5.40	-2.85	1.00
9	9	36	1	1.21	-1.47	-4.23	-1.61	1.00
10	10	29	1	1.15	-0.71	-4.37	-2.14	0.99
11	11	24	1	1.02	-0.38	-3.72	-1.05	1.00
12	12	4	1	1.23	-1.44	-4.48	-1.14	1.00
13	13	13	1	2.42	-1.40	-4.79	3.07	1.00
14	14	37	1	1.06	-1.15	-4.71	-1.44	1.00
15	15	28	0	1.54	-1.44	-5.46	-2.90	1.00
16	16	7	1	1.32	-2.09	-7.01	-4.54	1.00
17	17	3	1	1.43	-2.30	-5.64	-1.93	1.00
18	18	4	1	2.79	-2.02	-6.21	-3.36	1.00
19	19	48	1	1.03	-0.57	-4.47	-1.07	1.00
20	20	38	1	1.43	-0.96	-4.27	-3.25	0.91
21	21	20	1	2.04	-1.60	-5.02	-1.74	1.00
22	22	8	1	2.18	-1.54	-5.33	-2.18	1.00
23	23	6	1	1.57	-2.00	-5.55	-1.57	1.00
24	24	47	1	1.14	-0.53	-4.67	-1.23	1.00



Findable vs Accessible



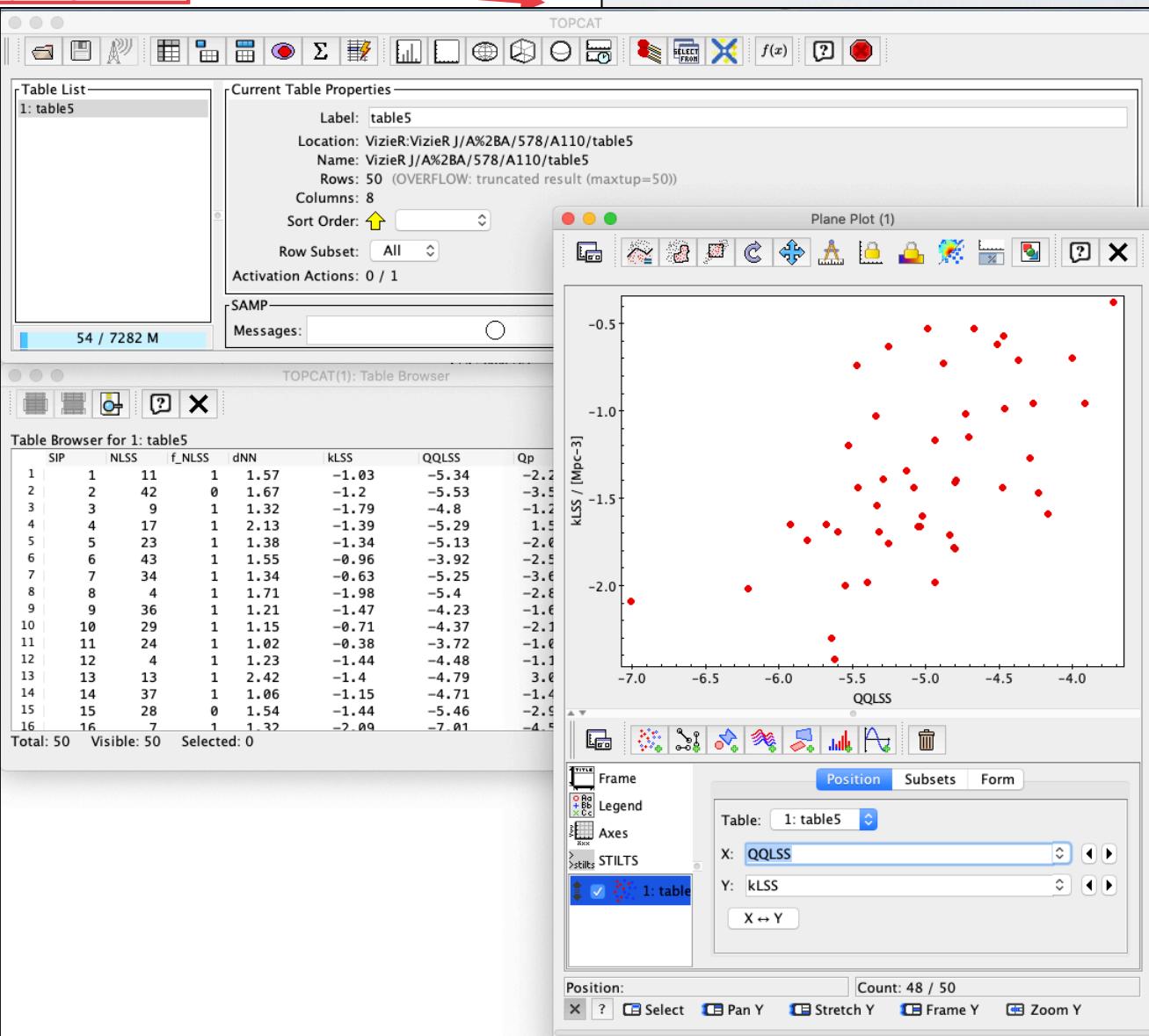
► Show constraint information

[J/A+A/578/A110/table5](#) Isolated galaxies, pairs and triplets (Argudo-Fernandez+, 2015) Post annotation 2015A&A...578A.110A ReadMe+ftp

Isolated pairs: relation with their local and large-scale environments (1240 rows)

[plot the output](#) [query using TAP/SQL](#)

Full	SIP	NLSS	f	dNN Mpc	kLSS [Mpc-3]	QQLSS	Qp
1	1	11	1	1.57	-1.03	-5.34	-2.28
2	2	42	0	1.67	-1.20	-5.53	-3.50
3	3	9	1	1.32	-1.79	-4.80	-1.25
4	4	17	1	2.13	-1.39	-5.29	1.52
5	5	23	1	1.38	-1.34	-5.13	-2.08
6	6	43	1	1.55	-0.96	-3.92	-2.54
7	7	34	1	1.34	-0.63	-5.25	-3.66
8	8	4	1	1.71	-1.98	-5.40	-2.85
9	9	36	1	1.21	-1.47	-4.23	-1.61
10	10	29	1	1.15	-0.71	-4.37	-2.14
11	11	24	1	1.02	-0.38	-3.72	-1.05
12	12	4	1	1.23	-1.44	-4.48	-1.14
13	13	13	1	2.42	-1.40	-4.79	3.07
14	14	37	1	1.06	-1.15	-4.71	-1.44
15	15	28	0	1.54	-1.44	-5.46	-2.90
16	16	7	1	1.32	-2.09	-7.01	-4.54
17	17	3	1	1.43	-2.30	-5.64	-1.93
18	18	4	1	2.79	-2.02	-6.21	-3.36
19	19	48	1	1.03	-0.57	-4.47	-1.07
20	20	38	1	1.43	-0.96	-4.27	-3.25
21	21	20	1	2.04	-1.60	-5.02	-1.74
22	22	8	1	2.18	-1.54	-5.33	-2.18
23	23	6	1	1.57	-2.00	-5.55	-1.57
24	24	47	1	1.14	-0.53	-4.67	-1.23



Findable vs Accessible



► Show constraint information

[J/A+A/578/A110/table5](#) Isolated galaxies, pairs and triplets (Argudo-Fernandez+, 2015) Post annotation 2015A&A...578A.110A ReadMe+ftp

Isolated pairs: relation with their local and large-scale environments (1240 rows)

[plot the output](#) [query using TAP/SQL](#)

Full	SIP	NLSS	f	dNN	kLSS	QQLSS
				Mpc	[Mpc-3]	
1	1	11	1	1.57	-1.03	-5.3
2	2	42	0	1.67	-1.20	-5.5
3	3	9	1	1.32	-1.79	-4.8
4	4	17	1	2.13	-1.39	-5.2
5	5	23	1	1.38	-1.34	-5.1
6	6	43	1	1.55	-0.96	-3.9
7	7	34	1	1.34	-0.63	-5.2
8	8	4	1	1.71	-1.98	-5.4
9	9	36	1	1.21	-1.47	-4.2
10	10	29	1	1.15	-0.71	-4.3
11	11	24	1	1.02	-0.38	-3.7
12	12	4	1	1.23	-1.44	-4.4
13	13	13	1	2.42	-1.40	-4.7
14	14	37	1	1.06	-1.15	-4.7
15	15	28	0	1.54	-1.44	-5.4
16	16	7	1	1.32	-2.09	-7.0
17	17	3	1	1.43	-2.30	-5.6
18	18	4	1	2.79	-2.02	-6.2
19	19	48	1	1.03	-0.57	-4.4
20	20	38	1	1.43	-0.96	-4.2
21	21	20	1	2.04	-1.60	-5.0
22	22	8	1	2.18	-1.54	-5.3
23	23	6	1	1.57	-2.00	-5.5
24	24	47	1	1.14	-0.53	-4.6

Total: 50 Visible: 50 Selected: 0

TOPCAT

Table List: 1: table5

Current Table Properties:

- Label: table5
- Location: VizieR:VizieR J/A%2BA/578/A110/table5
- Name: VizieR J/A%2BA/578/A110/table5
- Rows: 50 (OVERFLOW: truncated result (maxtup=50))
- Columns: 8
- Sort Order: [↑](#)
- Row Subset: All
- Activation Actions: 0 / 1

SAMP

Messages: [○](#)

TOPCAT(1): Table Browser

Plane Plot (1)

X-axis: QQLSS

Y-axis: kLSS / [Mpc-3]

Data points (red circles):

QQLSS	kLSS / [Mpc-3]
-7.0	-2.0
-6.8	-1.5
-6.5	-1.0
-6.2	-0.8
-6.0	-1.2
-5.8	-1.8
-5.5	-1.5
-5.2	-1.2
-5.0	-1.0
-4.8	-0.8
-4.5	-0.5
-4.2	-0.2
-4.0	0.0
-3.8	0.5
-3.5	0.8
-3.2	1.0
-3.0	1.2
-2.8	1.5
-2.5	1.8
-2.2	2.0
-2.0	2.2
-1.8	2.5
-1.5	2.8
-1.2	3.0
-1.0	3.2
-0.8	3.5
-0.5	3.8
-0.2	4.0
0.0	4.2
0.5	4.5
0.8	4.8
1.0	5.0
1.2	5.2
1.5	5.5
1.8	5.8
2.0	6.0
2.5	6.5
3.0	7.0
3.5	7.5
4.0	8.0
4.5	8.5
5.0	9.0
5.5	9.5
6.0	10.0
6.5	10.5
7.0	11.0

Frame

Legend

Axes

STILTS

Position Subsets Form

Table: 1: table5

X: QQLSS

Y: kLSS

X ↔ Y



Open applies to all elements involved in research



- Data (inputs and results), parameters
- Code, software environment
- Annotations, documentation
- Article, plots

This course more focused on
Software and Article

Git and GitHub as tools supporting Open Science

Git: open source tools for version control

- Support re-use of codes (and other resources)
- Keep track of the changes made in the original work



Source: <https://git-scm.com/>

GitHub: code hosting platform for version control & collaboration

- Catalogue: make software “findable”
- Documentation: make software “understandable”
- Visualize code / make software “accessible”
- Collaboration: make software “re-usable”

Session 1 and 2

AMIGA-IAA / hcg-16 Public

Code Issues 2 Pull requests Actions Projects Wiki Security Insights

master 4 branches 4 tags

sebastian-luna-valero Test EOSC integration (#13) ... 8c110ee on 4 Nov 2021 171 commits

casa Added NW clump to moments generation task. 3 years ago

cgtcore add more regexes to 'cleanup' task in pipeline.py 13 months ago

docker bugfix docker/Dockerfile.sofia 3 years ago

plot_scripts Fix broken JSON format. 2 years ago

sofia Added HIPASS cube SoFiA step to pipeline. 3 years ago

LICENSE Initial commit 3 years ago

README.md Test EOSC integration (#13) 5 months ago

codecheck.yml Export table 2 to a csv file. 2 years ago

environment.yml pin udocker to 1.3.1 release (#12) 6 months ago

postBuild Added HIPASS mask to tar 3 years ago

run.sh use either curl or wget in run.sh 13 months ago

README.md

launch binder

1) Pipeline for HCG-16 Project

This repository hosts a pipeline to reproduce the data reduction and analysis of Jones et al. 2019.

Here are the steps to run the pipeline:

First make sure you create and go to a new working directory:

```
mkdir pipeline-run  
cd pipeline-run
```

About

HCG-16 Project

- Readme
- MIT License
- 2 stars
- 6 watching
- 0 forks

Releases 4

Repo synced with Zenodo (Latest) on 28 Sep 2021 + 3 releases

Packages

No packages published

Contributors 3

- jonesmg Mike Jones
- sebastian-luna-valero Sebastian Lun...
- julian-garrido Julián Garrido

Languages

- Python 55.8%
- Jupyter Notebook 41.5%
- Shell 2.2%
- Roff 0.5%



Re-usable / Re-executable software

Packaging your analytical tool and the software environment

- Repeat the analysis (same data)
- Replicate the analysis (different data)
- Avoid OS/libraries dependencies

Session 3

Software package systems: Conda, Pip
Virtualization and Containerization: Singularity



Overly Honest Method

@OverlyHonestly



You can download our code from the URL supplied. Good luck downloading the only postdoc that can get it to run, though #OverlyHonestMethods



Instituto de Astrofísica de Andalucía, IAA-CSIC

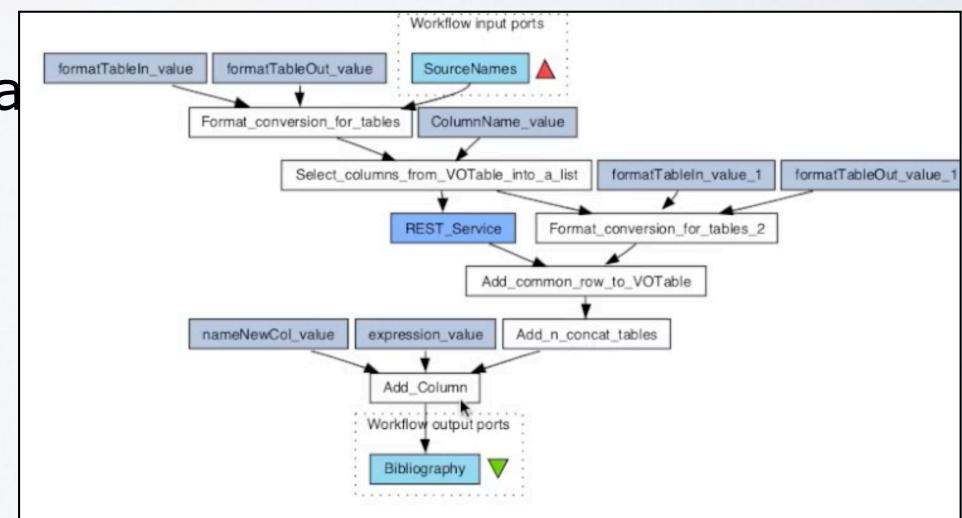
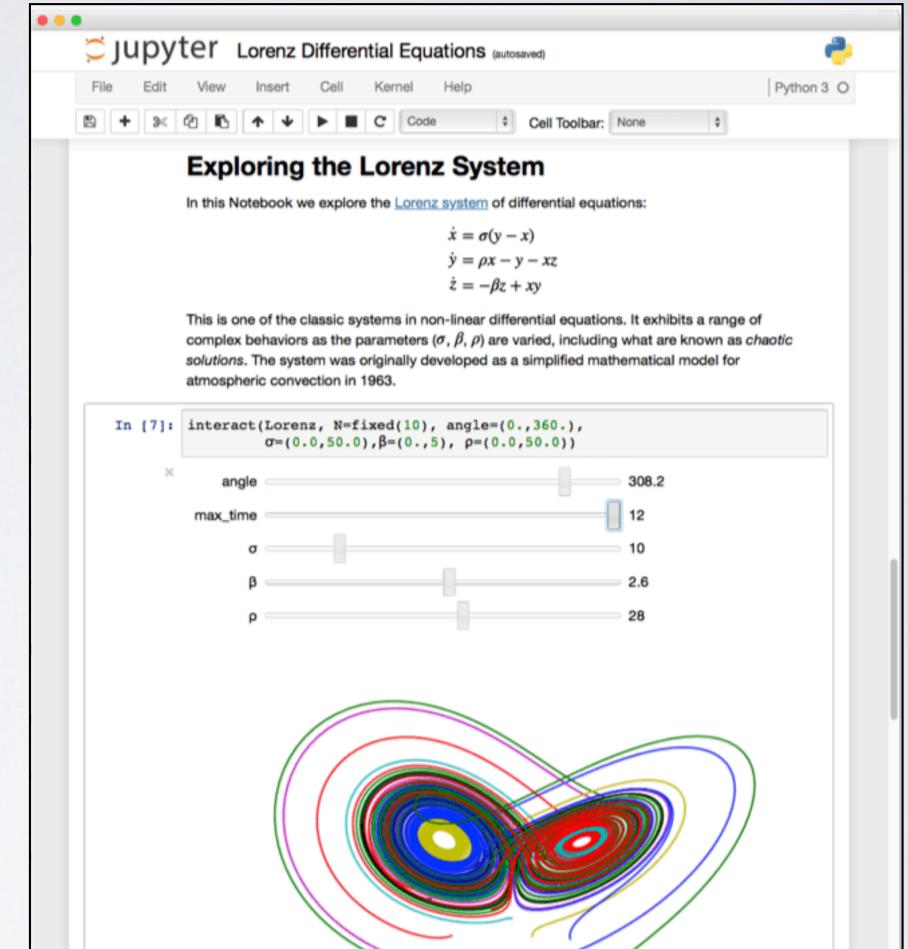


Understandable software

Open Notebooks are documents that contain equations, visualisations, narrative text and live code that can be executed independently and interactively, with output visible immediately beneath the input. (<https://doi.org/10.5281/zenodo.2631868>)

Session 4 and 5

Scientific workflows networks of analytical steps that may involve, e.g., database access and querying steps, data analysis and mining steps, and many other steps including computationally intensive jobs on high-performance cluster computers (<https://doi.org/10.1002/cpe.994>)



Make your articles Open

- Gold route by publishing Open Access
- Green route by self-archiving on arXiv
- Link your code/data

Session 6

"After 1 January 2020 scientific publications on the results from research funded by public grants provided by national and European research councils and funding bodies, must be published in compliant Open Access Journals or on compliant Open Access Platforms."

<https://www.coalition-s.org/>

arXiv > astro-ph > arXiv:1504.00117

Astrophysics > Astrophysics of Galaxies

[Submitted on 1 Apr 2015 (v1), last revised 30 Apr 2015 (this version, v2)]

Catalogues of isolated galaxies, isolated Universe

M. Argudo-Fernández, S. Verley, G. Bergond, S. Duarte Puebla, A. Espada, J. Sulentic, J. E. Ruiz, S. Leon

The construction of catalogues of galaxies and the a posteriori study hampered by scarce redshift information. The new 3-dimensional (3D) catalogues distinguish isolated galaxies from a background-projected galaxy population. We aim to identify isolated pairs, and isolated triplets for testing galaxy evolution and secular processes. We also characterise their local and large-scale environments. We used spectroscopic and photometric data to automatically and homogeneously compile catalogues of 3702 isolated galaxies in the Local Universe. To quantify the effects of their local and large-scale environments, we selected the brightest galaxy in each sample. We find evidence of isolated pairs and triplets separated by more than 450 kpc with radial velocity difference $\Delta v \leq 1$ km s⁻¹. We find that more than 98% of the total tidal strength affecting the central galaxy is due to the environment, and degrees of relation with their physical and large-scale environments. For isolated galaxies, isolated pairs, and isolated triplets, we find a common origin in the outer parts of filaments, walls, and clusters, and generally differ in their physical properties.

Comments: 20 pages, 13 figures, 6 tables, accepted for publication in *Astronomy & Astrophysics*
<https://doi.org/10.48550/arXiv.1504.00117>

Subjects: Astrophysics of Galaxies (astro-ph.GA)

Cite as: arXiv:1504.00117 [astro-ph.GA]
(or arXiv:1504.00117v2 [astro-ph.GA] for this version)
<https://doi.org/10.48550/arXiv.1504.00117>

Journal reference: A&A 578, A110 (2015)

Related DOI: <https://doi.org/10.1051/0004-6361/201526016>

Submission history

From: Maria del Carmen Argudo Fernandez [view email]

[v1] Wed, 1 Apr 2015 06:36:58 UTC (4,291 KB)

[v2] Thu, 30 Apr 2015 02:50:24 UTC (4,273 KB)

Bibliographic Tools

Code & Data

Related Papers

About

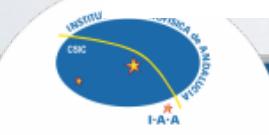
Code and Data Associated with this Article

arXiv Links to Code & Data (What is Links to Code & Data?)

Official Code

 <https://github.com/margudo/LSSGALPY>

Community Code



References

- **Reproducibility & Open Science in the SKA Era.** R. Ainsworth et al.
<https://doi.org/10.5281/zenodo.2631868>
- **Open Science for sustainability and inclusiveness: the SKA role model.** L. Verdes-Montenegro et al. <https://www.youtube.com/watch?v=ErNT9Va9vus>

Thanks!

