

Dr. Johan COMPARAT

Curriculum vitae

Research interest

- Observational cosmology The large-scale structure of the Universe, galaxy formation and evolution, active galaxies, strong and weak gravitational lensing, clusters of galaxies.
- Physics, mathematics N-body simulations, structure formation, logic and relativity.
- Data science Digital twins, machine learning and artificial intelligence, end-to-end simulations, forward models.

Professional History and Education

- Jan. 2017 – **Researcher at Max-Planck-Institut für extraterrestrische Physik** www.mpe.mpg.de, *MPG, Garching, Germany*, Collaborators: Pr. K. Nandra, Dr. A. Merloni, Dr. M. Salvato, Dr. A. Finoguenov, Dr. Eckert, Dr. E. Bulbul.
Galaxies and their X-ray emission. Clustering of AGN. Cosmology with the cluster halo mass function. End-to-end cosmological simulations for X-ray all sky surveys. Optical follow-up of X-ray sources with photometry and spectroscopy.
- Jan. 2014 – **Severo Ochoa Post-doctoral fellow at the Instituto de Fisica Teorica of the Universidad Autonoma de Madrid** www.ift.uam-csic.es, *CSIC, Madrid, Spain*, Collaborators: Pr. F. Prada, Pr. G. Yepes, Pr. A. Knebe.
N-body simulations and galaxy surveys.
- Jul. 2013 – **Invited researcher at Centre de Physique des Particules de Marseille and Laboratoire d'Astrophysique de Marseille**, *CNRS, Marseille, France*, Collaborators: Pr A. Ealet, Pr. L. Tresse, Pr. S. Escoffier.
Abundance of [OII] emitting galaxies.
- Mar. 2010 – **PhD in Astrophysics and Cosmology**, *Laboratoire d' Astrophysique de Marseille*
Jun. 2013 <http://lam.oamp.fr>, CNRS, France, Advisors: Pr. J-P. Kneib, Dr. C. Schimd.
Defense: 21st.06.2013.
Baryonic acoustic oscillations with emission line galaxies at intermediate redshift. The large-scale structure of the universe.
- Sep. 2008 – **Master degree in Physics**, *Ecole Polytechnique Fédérale de Lausanne, LASTRO* <http://lastro.epfl.ch>, Switzerland, Advisors: Pr. G. Meylan and Pr. F. Courbin.
Feb. 2010 Search for lensed quasars to measure precisely their mass distribution.
- Sep. 2003 – **Master degree in Engineering**, *Ecole Polytechnique* www.polytechnique.fr,
Sep. 2008 Palaiseau, France, Advisor: Pr. J-P. Beaulieu.
Exoplanet detection using microlensing.
- Sep. 2000 – **Baccalauréat and Abitur (Double Graduation in French and German)**, *International high school* www.ac-grenoble.fr/cite.scolaire.internationale/,
Sep. 2003 Grenoble, France.

Long term visits

LBL, Berkeley **Affiliated researcher at Lawrence Berkeley National Laboratory, Berkeley, CA, USA**, Collaboration with D. Schlegel, June 2015.

CFA, Harvard **Center For Astrophysics, Harvard, Cambridge USA**, Collaboration with D. Eisenstein, February, march 2013.

Publications

141 scientific articles :

- 119** in peer-reviewed journal, including
 - 12** as first author,
 - 5** supervising PhD students,
 - 24** in close collaboration,
 - 52** in medium-size collaborations and
 - 26** in large consortia;
- 22** in non-peer-reviewed journals or arXiv, including
 - 10** 'white papers',
 - 8** Proceedings,
 - 4** ArXiv publications.

22 catalogs :

- 12** on catalogues Vizier.
- 10** SDSS value-added catalogues.

Citation metrics (ADS bumblebee, on 02.11.2020):

- 47** at h-index
- 11,309** citing papers
- 165,022** reads

Funding

- PhD grant 'polytechnicien' (AMX), 2010-2013 63,000 Euros
- Predoc fund, 2013 (CFA Harvard), 3000 USD

Institutional responsibilities

- MNRAS, A&A reviewer
- ANR, INAF reviewer (French and Italian funding agency)
- **2019-: lead of the eROSITA cosmology work package**
- **2019-: principal investigator of the eROSITA/4MOST cluster spectroscopic survey (500,000 fiber hours)**
- **2019-: lead of the eROSITA/SDSS-V cluster spectroscopic survey**
- **2018-: co-chair of the eRosita/HSC AGN and clustering working group** (with M. Salvato, Y. Toba and T. Nagao)
- 01.2018-01.2020: co-chair of the eBOSS galaxy science working group (with J. Tinker)
- 01.2017-01.2020: Responsible for the SDSS-IV/eBOSS SPIDERS data.
- 01.2014-06.2018: Responsible for the SDSS-IV/eBOSS ELG program. About 450h of spectroscopy to obtain a quarter million redshifts over 2.5 years

Students supervision

PhD students **R. Seppi, 2019-2023**, MPE Garching, Germany, Pr. K. Nandra, J. Comparat, 100%.

J. Ider Chitham, 2017-2021, MPE Garching, Germany, Pr. K. Nandra, J. Comparat, 100%.

F. Albareti, 2015-2018, UAM, Madrid, Espagne, Pr. Prada, 20%.

S. Rodriguez-Torres, 2014-2017, UAM Madrid, Spain, Pr. Prada & Pr. Yepes, 30%.

G. Favole, 2012-2016, UAM Madrid, Spain, Pr. Prada, 30%.

Master students
C. Caruncho Llaguno, UAM Madrid, Spain, 2016, 100%.

Teaching, 544h

19-23 Nov. 2018 **4h. Lecture + exercise. Cosmological surveys**, AHEAD school on X-ray and multi-wavelength surveys, MPE/MPG, Garching, Germany.

21-52 Nov. 2016 **2h Lecture + exercise. Python for Skies and Universes**, 2nd SELGIFS Advanced School on Integral-Field Spectroscopic Data Analysis, Universidad Autonoma de Madrid, Spain.

Spring 2014, 2015, 2016 **24h. Studying the large scale structure of the Universe with galaxy surveys**, Universidad Autonoma de Madrid, Spain, Master of Physics, Advanced cosmology course.

15-19 Sep. 2014 **4h. Target selection in galaxy surveys**, Corfu dark energy and galaxy survey school for graduate students, In collaboration with Pr. J. A. Newman, Corfu, Greece.

Autumn 2010, 2011, 2012 **210h. Optics, mechanics, acoustics, mathematics**, Université de Marseille Provence, France, Physics Bachelor 1st and 2nd year.

2007, 2008 **300h. Mathematics**, Classes préparatoires at Optimal Prépa, Paris, France, Physics and Mathematics in Bachelor 1st and 2nd year, <http://www.optimalsupspe.fr>.

Outreach activities

- Outreach article in German in the magazine 'Physik in unserer Zeit' Wiley editions (March 2022).
- Two interviews with journalist Tristan Vey leading to two articles about eROSITA in Le Figaro.
- Open doors at MPE, Garching. 21.10.2017. 450 visitors. Animation of the rainbow workshop (in German)
- Fête de la science, LAM, Marseille, France. 12.10.2010. 300 student. Spectroscopy workshop

Participation in projects

Currently

eRosita

- Lead of the eROSITA cosmology work package
- In charge of the spectroscopic follow-up of eROSITA clusters
- In charge of eROSITA end-to-end simulations
- Multi-wavelength models of the AGN and cluster samples
- In charge of clustering measurements

4MOST

- PI of the 4MOST/eROSITA cluster survey
- In charge of the mock catalogues for three consortium surveys: eRosita cluster, eRosita AGN and cosmology (S5, S6, S8)

- o Participates in the optimisation of the observational plan (Working group 2)
- o Member of the facility simulator team and of the Operation System (4FS, OpSys)

Previously

SDSS-IV. Data scientist for SPIDERS: coordination of data analysis and of value added catalogues. Representative for MPE (institute wide, about 400 persons) at the SDSS-IV collaboration council.

DECam legacy survey. Photometric pipeline (TRACTOR), data simulation (OBIWAN/DESIIM).

SDSS-III, IV. Emission line galaxies: target selection, redshift measurement, emission line measurement, catalog creation. **Architect of the SDSS-IV collaboration.**

MultiDark. algorithms to measure the halo mass function and large scale halo bias. Populating DM simulations with galaxies.

DESI. target selection of emission line galaxies.

VLT/FORS2, VLT/MUSE. measurement of galaxy properties in 1D spectra.

CS82 & VICS82. visual inspection and bright star mask creation.

Conference organisation, seminars

- o Co-organizer. SDSS collaboration meeting. 06.2020. Virtual meeting hosted by NYC. 300 participants.
- o Co-organizer. Alpine cosmology workshop. 07.2017, 07.2018, 07.2019. 20 participants.
- o Organizer. Deep fields and mini-surveys session, LSST@europe3, 12.06.2018, Université de Lyon, France
- o Organizer. SDSS-IV/eBOSS collaboration meeting in Garching (MPE) Germany, 02.2018, 80 persons.
- o Co-Organizer. Calar Alto Spectroscopic Explorer kick-off meeting, 17-19.02.2016. IAA/CSIC, Granada, Spain. 30 persons.
- o Co-Organizer. Dark energy and galaxy survey school. Corfu, Greece. 15-19.09.2014. 20 PhD students.
- o Co-Organizer. SDSS-IV collaboration meeting. IFT/CSIC, Madrid, Spain. 20-24.07.2015. 200 persons.
- o Organizer of the Cosmology Lunch Club in Madrid 2014-2017. 10 - 20 persons, twice a month.

Conferences, seminars et workshops

93 presentations : 11 invited international conferences, 40 international conferences, 25 invited seminars, 32 workshops, 2 poster

11 invited international conferences

1. Mapping large scale structures in X-rays: cosmological forecast. Cosmology from Home. 07.2021.
2. The cosmic web of X-ray AGNs. eROSITA collaboration meeting. 23.06.2021.
3. Results of the SPectroscopic IDentification of ERosita Sources. SDSS collaboration meeting. 06.2020.
4. Consortium Survey 5, Galaxy Cluster Redshift Survey. Preparing for 4MOST. A community workshop introducing ESO's next-generation spectroscopic survey facility. 07.05.2019. ESO, Garching, Germany
5. Sloan Digital Sky Survey IV, Extended Baryonic Oscillation Spectroscopic Survey, Emission Line Galaxies Program, Conference towards understanding emission line galaxies, 03.09.2018, Teruel, Spain
6. A holistic approach for cosmology with extra-galactic surveys. Cosmology hiking conference, 16.07.2018, Val de Vogna, Italy
7. Stellar population properties for 2 million galaxies from SDSS DR14 and DEEP2 DR4 from full spectral fitting, Frontier Research in Astrophysics - III, 30.05.2018, Mondello, Palermo, Italy
8. An extra-galactic mock for eRosita and 4MOST, Mock Durham: Galaxy formation for Surveys, 17.04.2018, Durham, United-Kingdom
9. Accurate mass function of dark matter halos, cosmology with clusters of galaxies, International Max Planck Research School on Astrophysics, 11.04.2018, MPE, MPG, Garching, Germany
10. Mapping the Universe, current and future measurements of the baryonic acoustic oscillation standard ruler, 24.07.2017, Cosmology hiking conference, Allgauer Alpen, Oberstdorf, Germany

11. Photometric and spectroscopic data for the selection of emission line galaxies, eBOSS collaboration meeting, revue ELG, 4.02.2016, EPFL, Lausanne, Switzerland

25 invited seminars

1. The cosmic web of X-ray AGNs. Cosmology Seminar MPA. 25.05.2021.
2. Full-sky photon simulation of clusters and active galactic nuclei in the soft X-rays for eROSITA. Baryon Pasting seminar. 18.11.2020
3. The final SDSS-IV/SPIDERS X-ray point source spectroscopic catalogue. Seminar at MPE high energy group kaffee runde, 01.2020, MPE, Garching, Germany
4. Simulating the eROSITA Sky. Fachbeirat. 15.06.19. MPE, Garching, Germany
5. 4MOST survey strategy. Seminar. 27.05.19. Opinas, MPE, Garching, Germany
6. Mapping the Universe. Seminar. 24.05.19. Kurt Goedel Research Center. Wien. Austria
7. An eROSITA mock catalog of Active Galactic Nuclei and their large-scale structure. Seminar. 16.05.19. IAA, Granada, Spain
8. An eROSITA mock catalog of Active Galactic Nuclei and their large-scale structure. Seminar at MPE high energy group kaffee runde, 06.02.2019, MPE, Garching, Germany
9. An eROSITA mock catalog of Active Galactic Nuclei and their large-scale structure. Seminar. 21.01.2019. University of Helsinki. Finland
10. Near-UV spectroscopy of star-forming galaxies from eBOSS: signature of ubiquitous galactic-scale outflows, 'ESO Gas matters' seminar, 12.11.2018, ESO, Garching, Germany
11. A global approach for cosmology with extra-galactic surveys, Sternwart cosmology coffee, 26.07.2018, LMU Sternwart, Munich, Germany
12. A holistic approach for cosmology with extra-galactic surveys, 22.02.2018, ICG, Portsmouth, England
13. A holistic approach for cosmology with extra-galactic surveys, 15.12.2017, CRAL, Lyon, France
14. Stellar population properties for 2 million galaxies from SDSS DR14 and DEEP2 DR4 from full spectral fitting, MPE high energy group kaffee runde, 30.11.2017, MPE, Garching, Germany
15. Accurate halo mass and velocity functions in Planck cosmology, Sternwart Seminar, 21.06.2017, LMU, Munich, Germany
16. Mapping the Universe, current and future measurements of the baryonic acoustic oscillation standard ruler, 29.05.2017, OPINAS group, MPE, Garching, Germany
17. Accurate halo mass and velocity functions in Planck cosmology, MPE high energy group kaffee runde, 23.03.2017, MPE, Garching, Germany
18. Mapping the Universe, current and future measurements of the baryonic acoustic oscillation standard ruler, 13.05.2016, INPL, Lyon, France
19. Mapping the Universe, current and future measurements of the baryonic acoustic oscillation standard ruler, 9.02.2016, LASTRO/EPFL, Observatoire de Genève, Switzerland
20. The Low Redshift survey at Calar Alto, Lunchtime Astronomy Talk, 22.01.2016, ICC, Durham, United-Kingdom
21. Mapping the universe, current and future measurements of the baryonic acoustic oscillation standard ruler, 11.01.2016, University College London, United-Kingdom
22. Baryonic acoustic oscillations with $[O_{II}]$ maps, 16.10.2014, CEFCA, Teruel, Spain
23. The eBOSS and DESI projects, Seminaire, 12.06.2014, IFT/CSIC, Madrid, Spain
24. A bright and massive galaxy population at $z=1$, ITC CFA Seminar, 26.02.2013, Harvard-CFA, Cambridge United States
25. A search for Quasar lensing Galaxies, Seminaire du tea time, 11.2010, Laboratoire d'Astrophysique de Marseille, France

40 international conferences

1. Forward modelling the cosmological large scale structure seen in the X-ray by eROSITA. ESAC cluster conference. 09.2021.

2. Full-sky photon simulation of clusters and active galactic nuclei in the soft X-rays for eROSITA. NAM 2021. 07.2021.
3. Cosmology work package. eROSITA collaboration meeting. 01.2021. Virtual meeting
4. The final SDSS-IV/SPIDERS X-ray point source spectroscopic catalogue. Astronomische Gesellschaft. 09.2020
5. Simulating the (extra galactic) eROSITA sky. eROSITA collaboration meeting. 07.2020. Virtual meeting
6. SPIDERS AGN. SPIDERS collaboration meeting. 01.2020. JMU, Liverpool, UK.
7. 4MOST all-hands meeting. 16-20.09.19. Potsdam, Germany
8. An eROSITA mock catalog of Active Galactic Nuclei and their large-scale structure. Cosmo Cruise Conference. 24.08.19. Venice, Italy
9. Studying AGN clustering in the eFEDS field. HSC/eROSITA collaboration meeting.15.05.2019. MPE Garching, Germany.
10. Simulated multi wavelength surveys of AGN and clusters. HSC/eROSITA collaboration meeting.13.05.2019. MPE Garching, Germany.
11. An eROSITA mock catalog of Active Galactic Nuclei and their large-scale structure, The low redshift survey at calar alto. 12.03.2019, Astro-plate-III Bamberg, Germany
12. Planning 4MOST. eRosita collaboration meeting, 06.03.2019, Potsdam, Germany
13. Joint AGN-Cluster simulation on eFEDs with large scale structure. eRosita collaboration meeting, 05.03.2019, Potsdam, Germany
14. Simulations, Simput, Validation. eRosita collaboration meeting, 04.03.2019, Potsdam, Germany
15. eBOSS Galaxy science and SPIDERS clusters report, eBOSS collaboration meeting, 10.12.2018, LPNHE, Paris, France
16. New 4FS developments, 4MOST All hands meeting, 25.09.2018, Heidelberg, Germany
17. Cosmology with future spectroscopic surveys of galaxies, Societe Française d'Astronomie et Astrophysique, 04.07.2018, Bordeaux, France
18. Planning 4MOST. Downsampling and survey speed, 4MOST science meeting, 19.06.2018, Observatoire de Genève, Switzerland
19. An eRosita extragalactic mock, planning spectroscopic follow-up, eRosita collaboration meeting, 25.04.2018, MPE, MPG, Garching, Germany
20. Galaxy science working group report, eBOSS collaboration meeting, 07.02.2018, MPE/MPG, Garching, Germany
21. Virtual skies for eRosita, eRosita collaboration meeting, 17-19.07.2017, Universite d'Hamburg, Germany
22. Clustering of emission line galaxies, Conference sur les mocks de galaxies, 20.04.2016, U. Catolica, Santiago, Chile
23. The Low Redshift survey at Calar Alto, Calar Alto Spectroscopic Explorer kick-off meeting, 17.02.2016, IAA/CSIC, Granada, Spain
24. Calar Alto Spectroscopic Explorer, Encuentro RIA-SpaceTec, 12.02.2016, CSIC, Madrid, Spain
25. Mapping the universe, current and future measurements of the baryonic acoustic oscillation standard ruler, VII CPAN jornadas, 1.12.2015, Segovia, Spain
26. MultiDark lightcones for eBOSS, SDSS-IV collaboration meeting, 20-24.07.2015, IFT/CSIC, Madrid, Spain
27. The evolution of the emission line luminosity density in the Universe, SDSS-IV collaboration meeting, 20-24.07.2015, IFT/CSIC, Madrid, Spain
28. Baryonic acoustic oscillations with emission line galaxies, eBOSS collaboration meeting, 3-6.12.2014, Apache Point Observatory, New Mexico, United States
29. Constraint on the time variation of the fine-structure constant with the SDSS-III/BOSS DR12 QSO sample, BOSS collaboration meeting, 3-6.12.2014, Apache Point Observatory, New Mexico, United States

30. The [O_{II}] luminosity function, SDSS-IV collaboration meeting, 27.07-03.08 2014, University of Utah, United States
31. Future dark energy surveys, Multidark collaboration meeting, 2-4.04.2014, IFIC/CSIC, Valencia, Spain
32. ELG classification and redshifting with BOSS, expectations for eBOSS, eBOSS collaboration meeting, 10-12.12.2012, CMU, Pittsburgh, United States
33. ELG selection for eBOSS, Three scenarii, eBOSS collaboration meeting, 10-12.12.2012, CMU, Pittsburgh, United States
34. Properties of faint emission line galaxies observed by BOSS, BOSS collaboration meeting, 10-12.12.2012, CMU, Pittsburgh, United States
35. Galaxy bias and BAO tracers, a joint clustering weak-lensing analysis, BOSS collaboration meeting, 10-12.12.2012, CMU, Pittsburgh, United States
36. Emission Line Galaxies observed by VLT on COSMOS field, [O II] luminosity function at $z = 1.2$ and $z = 1.4$, BigBOSS collaboration meeting, 8-11.10.2012, APC, Paris, France
37. What galaxy bias for current and future BAO surveys ?, CosmoBias conference, 22-25.05.2012, Laboratoire d'Astrophysique de Marseille, France
38. Ancillary Science, Emission Line Galaxies and linear bias, BOSS collaboration meeting, 4-6.01.2012, New York University, United States
39. Ancillary program, bright emission line galaxies, BOSS collaboration meeting, 24-26.03.2011, Apache Point Observatory, New Mexico, United States
40. Combining BOSS and CFHT to measure the galaxy bias, BOSS collaboration meeting, 16-18.09.2010, APC, Paris, France

32 workshops

1. eROSITA cluster face-2-face meeting. Cosmology work package. 01.2022 Virtual meeting.
2. eROSITA cluster face-2-face meeting. Spectroscopic follow-up. 01.2022 Virtual meeting.
3. eROSITA cluster face-2-face meeting. Cosmology work package. 06.2021 Virtual meeting.
4. eROSITA cluster face-2-face meeting. Spectroscopic follow-up. 06.2021 Virtual meeting.
5. Measuring galaxy cluster redshifts with the AAO/AAT infrastructure. 02.2021. eROSITA AAL virtual workshop.
6. eROSITA cluster face-2-face meeting. Cosmology work package. 11.2020 Virtual meeting
7. eROSITA cluster face-2-face meeting. Simulations. 11.2020 Virtual meeting
8. The final SDSS-IV/SPIDERS X-ray point source spectroscopic catalogue. German astronomical society. 09.2020. Virtual meeting
9. 4MOST community workshop. What community PIs need to provide: target catalogues, templates, FoM, SSC. 07.2020, Virtual meeting
10. eROSITA AGN face-2-face meeting. Angular clustering analysis of eFEDs. 07.2020 Virtual meeting
11. eROSITA cluster face-2-face meeting. Cosmology work package. 07.2020 Virtual meeting
12. eROSITA AGN face-2-face meeting. Angular clustering analysis of eFEDs. 02.2020 MPE, Garching, Germany
13. eROSITA cluster face-2-face meeting. Cosmology work package. 02.2020 LMU, Munich, Germany
14. eROSITA AGN face-2-face meeting. Clustering. 04.07.19 MPE, Garching, Germany
15. eROSITA cluster face-2-face meeting. Cosmology work package. 02.07.19 MPE, Garching, Germany
16. SDSS-IV/SPIDERS workshop. SPIDERS DR16. 21.05.2019. IRAP. Toulouse. France
17. SDSS-IV/SPIDERS workshop. Update about SPIDERS and eBOSS. 20.01.2019. Helsinki. Finland
18. eROSITA/HSC collaboration, eRosita Ringberg workshop, 22.10.2018, Ringberg, Germany
19. Cosmology with eRosita in 2025+, SDSS-V workshop, 06.02.2018, MPE/MPG, Garching, Germany
20. Virtual skies for eRosita, eRosita cluster working group meeting, 27-28.11.2017, MPIA/AiFA, Bonn, Germany
21. Planning 4MOST, 4MOST survey planning workshop : sprint 2, 23.11.2017, MPE, Garching, Germany
22. Stellar population properties for 2 million galaxies from SDSS DR14 and DEEP2 DR4 from full spectral

- fitting, Granada cosmology workshop, 21.11.2017, IAA/CSIC, Granada, Spain
23. Virtual skies for eRosita, MPE high energy group retreat, 8-10.05.2017, Bamberg Castle, Germany
 24. Accurate halo mass and velocity functions in Planck cosmology, eRosita cluster working group meeting, 13-14.03.2017, LMU, Munich, Germany
 25. Calar Alto Spectroscopic Explorer, Calar Alto Instrumentation workshop, 13.10.2016, IAA/CSIC, Granada, Spain
 26. Mapping and mocking the large scale structure of the universe with emission line galaxies, MultiDark Galaxies Workshop, 26-30.09.2016, Universidad de La Plata, Argentina
 27. ELG redshift with eBOSS, eBOSS workshop, 13-15.03.2014, New York University, United States
 28. Logic and relativity, a different mathematical approach, Logic and relativity workshop, 16-18.10.2013, CPPM, Marseille, France
 29. ELG selection for eBOSS, current observations and future plans, eBOSS target selection work .2013, Observatoire de Genève, Switzerland
 30. ELG redshift, [OII] doublet and resolution, requirements for eBOSS and BigBOSS, Workshop on spectrograph design for eBOSS and DESI, 5.12.2012, CRAL, Lyon, France
 31. Emission line galaxies, observation, BigBOSS workshop, 16-20.07.2012, LBNL, Berkeley, California, United States
 32. Emission line galaxy target selection, BigBOSS workshop, 06.2011, LBNL, Berkeley, California, United States

2 Posters

1. The final SDSS-IV/SPIDERS X-ray point source spectroscopic catalogue. EAS 2021, S10.
2. The large-scale structure traced by simulated eROSITA AGN and Clusters. EAS 2021, S3.

Software

- Owner and organizer of the eROSITA cosmology github repository with 29 repositories under active development.
 - <https://github.com/ygolomsochtiwsretsulc>
- Virtual skies, first eROSITA digital twins (Comparat et al. 2019, 2020b),
 - https://gitlab.mpcdf.mpg.de/joco/lss_mock_dev/
- N-body simulations exploitation (Comparat et al. 2017a),
 - <https://github.com/JohanComparat/nbody-npt-functions>
- stellar population models (Comparat et al. 2017b),
 - <https://github.com/FireflySpectra/exploitation> https://github.com/JohanComparat/firefly_explore
- Luminosity functions and emission line measurements (Comparat et al. 2015, 2016),
 - <https://github.com/JohanComparat/pySU>
- archetype spectra construction,
 - <https://github.com/JohanComparat/archetypes>
- X-ray AGN selection function (SPIDERS AGN, Comparat et al. 2020a),
 - <https://github.com/JohanComparat/makeSample>

Data

- Participated in 10 value added catalogues in SDSS DR16 https://www.sdss.org/dr16/data_access/value-added-catalogs/
- data base *skies and universes* <http://projects.ift.uam-csic.es/skies-universes> 6.3To of data related to 11 scientific publications. 10 et 40 active users per month <http://skiesanduniverses.org> on 2 mirrors: Granada (F. Prada, Spain) and New-Mexico (A. Klypin, United States). 20To of data.
- 2.5 millions stellar population models, 2.3To,

<http://www.sdss.org/dr16/spectro/eboss-firefly-value-added-catalog/>, <https://firefly.mpe.mpg.de/>

- o Catalog of ~ 255,000 eBOSS/ELG targets, 16Mo,
<http://www.sdss.org/dr14/algorithms/eboss-target-selection/eboss-elg-target-selection/>

Skills

- Languages **French**, *mother tongue*.
English, *fluent*.
Spanish, *fluent*.
German, *fluent*.
Italian, *basic*.
- Computation **Python, LaTeX, Unix, Linux, gawk, slurm, HTML, sql, Mathematica, spark, scikit-learn, jupyter-notebook, MacOS, Windows, and various astronomy softwares**, *Creation of four SDSS-IV installable packages.*, Github repositories: <https://github.com/JohanComparat/>.
- Astronomy **X-ray photometric and spectroscopic observations with eROSITA, Optical imaging and spectroscopic observations at SDSS, CFHT, DECam, VLT FORS and VIMOS, Mt Canopus.**
- Data reduction **Optical data (photometry and spectroscopy). X-ray eROSITA data (eSASS).**
- Data base **Creation of the skies and universes data base** <http://skiesanduniverses.org/>.

Miscellaneous

- Roots **Grenoble (France), Geneva (Switzerland).**
- Arts **Piano, accordion, architecture, circus, cooking.**
- Sports **Judo (1st Dan), mountaineering, ski touring, rock climbing.**