VICTORIA TOPTUN

PhD Student at European Southern Observatory (ESO)

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Final-year PhD student at ESO studying the hot gas in the halos of galaxy groups with X-ray data. I combine stacking analysis of eROSITA data, simulations and optical group catalogs to understand how AGN feedback shapes the baryonic content of group halos.

RESEARCH PROJECTS

The CLuster and group Environment as Viewed by eROSITA (CLeVER)

2023 – present ESO

- eROSITA observations analysis
- eROSITA mock observations
- X-ray spectra modeling

Search for Intermediate Mass Black Holes (IMBH)

2017 – 2023 SAI MSU

- X-ray data (XMM, Chandra, Swift) calibration and analysis
- Photometry decomposition
- Elliptical isophotes analysis

4MOST Chilean AGN/Galaxy Extragalactic Survey (ChANGES)

2021 – 2023

- Catalog parent sample selection

RCSEDv2 – Reference Catalog of galaxy SEDs v2

2019 – 2023 SAI MSU

- Photometry assembly and calibration
- Backend and database development

EXPERIENCE

Astronomical data analysis

- **X-ray imaging and spectroscopy:** XMM-Newton SAS, Chandra CIAO, eROSITA eSASS, XSELECT, XSPEC, Sherpa
- **Virtual observatory:** TAP services, DaCHS, TOPCAT, DS9, Aladin
- **Surface photometry:** elliptical isophotes analysis (Python photutils ellipse), 1D and 2D fitting (GALFIT)

Skills in IT and computational science

- **DBMS:** PostgreSQL
- **Programming:** Python, C, C++

Observational experience

- **KMOS, ESO Paranal:** 9–15 Feb 2026, visitor observer
- **COSMOS, Cerro Tololo Observatory:** 28–30 Nov 2022
- **LCO Magellan Baade:** July 2022 (online)

EDUCATION

Ph.D. in Astrophysics (in progress)

European Southern Observatory & Ludwig-Maximilians-Universität München (LMU)

09.2023 – 09.2027 Munich

Joint B.Sc.+M.Sc. (6 years), qualification “Astronomer. Teacher of astronomy”

Moscow State University (SAI MSU)

09.2017 – 06.2023 Moscow

ACCEPTED OBSERVING PROPOSALS

Principal investigator

- **XMM-Newton AO-24:** Unveiling the halo properties of optically selected X-ray faint groups
- **XMM-Newton AO-24:** Photon Index vs Eddington Ratio Relation for Intermediate-Mass Black Holes

Co-author of 7 proposals to XMM-Newton, Chandra, JWST, VLT (MUSE, KMOS, X-Shooter), HST.

COMMUNITY SERVICE

- **2025 – present, Steering committee member**, EMPOWER KMOS Survey: contributing to survey decisions
- **2023 – present, Organizer & Chair**, ESO Weekly Journal Club: organizing and chairing the weekly sessions
- **2026, Co-supervisor**, ESO Summer Research Programme: 6-week M.Sc. summer student project
- **2025, Scientific Assistant**, ESO Observing Programmes Committee (P116): supporting the proposal review panel meetings
- **2025, LOC member**, conference “Multi-phase, Multi-temperature and Complex”
- **2023, LOC member**, conference “A Decade of ESO Wide-field Imaging Surveys”
- **2023, LOC member**, conference “A journey through galactic environments”

CONFERENCES & TALKS

- **Seminar talk**, Special seminar, INAF-OATs, Trieste, October 2026
- **Contributed talk**, Annual Meeting of the German Astronomical Society 2026, Garching, September 2026
- **Contributed talk**, The X-ray Universe 2026, Elche, June 2026
- **Seminar talk**, Institutsseminar, Universitätssternwarte Wien, Vienna, April 2026
- **Seminar talk**, Colloquia, INAF-IASF, Milan, April 2026
- **Seminar talk**, Astrophysics talk, INAF-OAS, Bologna, April 2026
- **Seminar talk**, Lagrange Seminar, Observatoire de la Côte d'Azur, Nice, January 2026
- **Seminar talk**, Galaxy Evolution Coffee, ESO-HQ, Garching, July 2025
- **Seminar talk**, Physics Seminar, NYU Abu Dhabi, March 2025
- **Seminar talk**, AGN Seminar, ESO-HQ, Garching, March 2025
- **Contributed talk**, Mind the Gap: Galaxies and the Large Scale Structure, Córdoba, December 2024
- **Seminar talk**, TMT Seminar, ESO-Chile, Santiago, November 2024
- **Contributed talk**, Resolving the Circumgalactic Medium and its impact on galaxy evolution, Santa Cruz, November 2024
- **Seminar talk**, High Energy Seminar, CfA, Boston, November 2024
- **Contributed talk**, First Results from the SRG/eROSITA All-Sky Survey: From Stars to Cosmology, Garching, September 2024
- **Contributed talk**, European Astronomical Society Annual Meeting, Padova, July 2024
- **Contributed talk**, Galaxy Groups in the Era of eROSITA and Euclid, Sexten, July 2024
- **Contributed talk**, "Some Like It Hot!" workshop, Garching, May 2024
- **Contributed talk**, Baryons in the Universe, Kavli IPMU, Kashiwa, March 2024
- **Poster talk**, A journey through galactic environments, Porto Ercole, September 2023
- **Flash talk**, Timescales in Astrophysics, Abu Dhabi, January 2023
- **Contributed talk**, ADASS XXXI, Cape Town, October 2021
- **Contributed talk**, Growing Black Holes: Accretion and mergers, Kathmandu, May 2021

Publication list

FIRST-AUTHOR PUBLICATIONS

- V. Toptun, P. Popesso, I. Marini, et al., "**The stellar-to-halo mass relation of central galaxies across three orders of halo mass**," *A&A*, vol. 712, A212, Aug. 2026, Art. no. A212. DOI: 10.1051/0004-6361/202659359
- V. Toptun, P. Popesso, I. Marini, et al., "**The eROSITA view on the halo mass–temperature relation: From low-mass groups to massive clusters**," *A&A*, vol. 700, A167, Aug. 2025, Art. no. A167. DOI: 10.1051/0004-6361/202554352
- V. A. Toptun, I. V. Chilingarian, K. A. Grishin, and I. Y. Katkov, "**Color Transformations of Photometric Measurements of Galaxies in Optical and Near-infrared Wide-field Imaging Surveys**," *PASP*, vol. 135, no. 1050, p. 084 102, Aug. 2023, Art. no. 084102. DOI: 10.1088/1538-3873/aceca0

CO-AUTHORED PUBLICATIONS

- D. T. Mazengo, P. Popesso, I. Marini, et al., "**What's missing in AGN feedback: Lessons learnt from Magneticum, IllustrisTNG, and Simba**," *A&A*, vol. 713, A292, Sep. 2026, Art. no. A292. DOI: 10.1051/0004-6361/202660403
- I. Marini et al., "**Baryonic assembly bias in X-ray-selected galaxy groups and clusters: Insights from the Magneticum simulation**," *A&A*, vol. 713, A50, Sep. 2026, Art. no. A50. DOI: 10.1051/0004-6361/202660015
- N. de Isídio et al., "**Circumgalactic medium depletion drives satellite quenching in IllustrisTNG**," *accepted for publication in A&A*, Aug. 2026. DOI: 10.48550/arXiv.2608.03693
- T. Mkrtchyan, C. Mazzucchelli, R. J. Assef, et al., "**4MOST ChANGES: Catalog of high-redshift quasar candidates (4.5 < z < 7) selected via spectral-energy-distribution fitting**," *A&A*, vol. 710, A170, Jun. 2026, Art. no. A170. DOI: 10.1051/0004-6361/202557171
- N. de Isídio, P. Popesso, Y. Bahé, et al., "**The kinematic imprinting of environmental quenching in z < 0.2 galaxies**," *A&A*, vol. 709, A263, May 2026, Art. no. A263. DOI: 10.1051/0004-6361/202558184
- P. Popesso, A. Biviano, I. Marini, et al., "**The hot gas mass fraction in halos: From Milky Way-like groups to massive clusters**," *A&A*, vol. 707, A362, Mar. 2026, Art. no. A362. DOI: 10.1051/0004-6361/202453256
- P. Popesso, I. Marini, K. Dolag, et al., "**Average X-ray properties of galaxy groups: From Milky Way-like halos to massive clusters**," *A&A*, vol. 704, A278, Dec. 2025, Art. no. A278. DOI: 10.1051/0004-6361/202453255
- P. Popesso, I. Marini, K. Dolag, et al., "**The perils of stacking optically selected groups in eROSITA data: The Magneticum perspective**," *A&A*, vol. 704, A277, Dec. 2025, Art. no. A277. DOI: 10.1051/0004-6361/202453253
- M. Demianenko, A. Afanasiev, E. Rubtsov, et al., "**Broad line region echo from highly accreting intermediate-mass black hole candidate SDSS J144850.08+160803.1: First probe of intra-night variability and reverberation mapping**," *A&A*, vol. 702, A202, Oct. 2025, Art. no. A202. DOI: 10.1051/0004-6361/202555139
- K. A. Grishin, I. V. Chilingarian, F. Combes, et al., "**NGC 3259: A signal for an untapped population of slowly accreting intermediate-mass black holes**," *A&A*, vol. 702, A42, Oct. 2025, Art. no. A42. DOI: 10.1051/0004-6361/202554130
- I. Marini, P. Popesso, K. Dolag, et al., "**The impact of assembly history on the X-ray detectability of halos: From galaxy groups to galaxy clusters**," *A&A*, vol. 698, A191, Jun. 2025, Art. no. A191. DOI: 10.1051/0004-6361/202554677
- I. Marini, P. Popesso, K. Dolag, et al., "**Detecting clusters and groups of galaxies populating the local Universe in large optical spectroscopic surveys**," *A&A*, vol. 694, A207, Feb. 2025, Art. no. A207. DOI: 10.1051/0004-6361/202452028
- I. Marini, P. Popesso, G. Lamer, et al., "**Detecting galaxy groups populating the local Universe in the eROSITA era**," *A&A*, vol. 689, A7, Sep. 2024, Art. no. A7. DOI: 10.1051/0004-6361/202450442
- F. E. Bauer, P. Lira, T. Anguita, et al., "**Chilean AGN/Galaxy Extragalactic Survey (ChANGES)**," *The Messenger*, vol. 190, pp. 34–37, Mar. 2023. DOI: 10.18727/0722-6691/5309
- A. S. Saburova et al., "**The volume density of giant low surface brightness galaxies**," *MNRAS*, vol. 520, no. 1, pp. L85–L90, Mar. 2023. DOI: 10.1093/mnrasl/slad005