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XRISM Support Scientist
(NASA Goddard Space Flight Center -
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Persons of reference:

- Prof. Jelle S. Kaastra (SRON, The Netherlands) – J.S.Kaastra@sron.nl
- Dr. Matteo Guainazzi (ESA/ESTEC, The Netherlands) – Matteo.Guainazzi@sciops.esa.int
- Dr. Norbert Werner (Masaryk University, Czech Rep.) – werner@physics.muni.cz

Born: June 27, 1989 – Brussels, Belgium
Nationalities: Belgian, French

Current position

- *Visiting Assistant Research Scientist*
- *XRISM Support Scientist* (Sponsor: Dr. Brian Williams)

NASA/GSFC CRESST II (Greenbelt, MD, USA) - UMD (College Park, MD, USA)

Past positions

- 2019-2022 *ESA Research Fellow*, ESTEC (Mentor: Dr. Matteo Guainazzi)
(Noordwijk, The Netherlands)
- 2017-2019 *Postdoctoral Researcher*, MTA-Eötvös University (Mentor: Dr. Norbert Werner)
(Budapest, Hungary)

2017-2017 *Postdoctoral Researcher*, Leiden University (Mentor: Prof. Jelle S. Kaastra)
(Leiden, The Netherlands)

Skills

AREAS OF SPECIALIZATION

High-energy astrophysics – X-ray spectroscopy – Clusters/groups of galaxies –
Intracluster medium – Chemical enrichment – *XMM-Newton*

COMPUTING SKILLS

Expert SPEX • *XMM-Newton* SAS • *XRISM* data analysis software
Good UNIX console – BASH – fortran 90 – Python (incl. numpy, scipy, astropy, matplotlib)
– \LaTeX – XSPEC – HEASoft – SAO ds9 – *Chandra* CIAO – Linux – Mac OS
Intermed. Inkscape – GIMP – C – Windows
Basic HTML – C++ – IDL – IRAF

LANGUAGES

Fluent French – English
Intermed. Dutch

Education

2013-2017 PHD in High-energy Astrophysics, Leiden University/SRON
(Leiden/Utrecht, The Netherlands)
2010-2012 MSc in Space Sciences, University of Liège
(Liège, Belgium) – *Magna Cum Laude*
2007-2010 BSc in Physics, Université Libre de Bruxelles
(Brussels, Belgium) – *Cum Laude*
2001-2007 HIGH SCHOOL in Latin-Mathematics, Lycée Émile Jacqmain
(Brussels, Belgium) – *Cum Laude*

Grants & Awards

2023 NASA Astrophysics Data Analysis Program (ADAP) - “Exploring the cosmic evolution
of the chemical composition of galaxy clusters”, \$237 000
2023 *Chandra* archive (PI) - “Metals under the microscope: Revisiting the enrichment in the
core of the Perseus cluster”, Cycle 25, \$47 000
2022 *XMM-Newton* observation (PI) - “A deep exploration of chemical enrichment and ther-
modynamics of S0 galaxies”, AO20, 81 ks (~31 h), \$49 000
2019 *XMM-Newton* observation (PI) - “Searching for X-ray non-thermal emission in an ex-
traordinarily radio-bright galaxy group”, AO19, 210 ks (~58 h)
2016 71th Netherlands Astronomy Conference - Poster Prize: Laureate

2006 Orthograph Championship (French): Laureate

Scientific responsibilities & Collaborations

- 2022-now Support Scientist for the *XRISM* Guest Observer Facility
- 2022-now Chair of the LEM (Line Emission Mapper) intergalactic medium abundances sub-group
- 2021-now Co-chair of the [Athena Topical Panel SWG1.2](#) (*Athena* Science Study team)
- 2015-now CHEERS collaboration (PI: J. de Plaa)
- Reviewed 9 publications as anonymous referee.
- Invited in 4 time allocation committees of X-ray observatories.

- Ongoing projects / collaborations: E. Pointecouteau, D. Barret, N. Clerc (France) – A. Simionescu, H. Akamatsu, J. de Plaa, J. S. Kaastra, L. Gu, M. Guainazzi, M. Wise (Netherlands) – N. Werner, R. Grossová, J. P. Breuer (Czech Republic) – N. Truong (Germany) – F. Gastaldello, C. Pinto, S. Ettori, M. Gaspari, V. Biffi (Italy) – Y. Ichinohe, T. Fukazawa, K. Nomoto (Japan) – Y. Su, A. Tumer (USA) – M.-L. Gendron-Marsolais (Chili) – A. Richard-Laferrrière, A. E. Sansom (UK)

Conferences, Colloquia & Workshops

INVITED TALKS

- Sept. 2024 “Physics of Galaxy Clusters and Groups”, *First Results from the SRG/eROSITA All-Sky Survey: From Stars to Cosmology*, Garching (Germany)
- Jul. 2024 “The metallicity of the ICM: observations”, *EAS Annual Meeting 2024*, Padova (Italy)
- Jul. 2024 “Metallicity and chemical abundance measurements and in galaxy groups in the era of high-resolution X-ray spectroscopy”, *Galaxy groups in the era of eROSITA and Euclid*, Sesto (Italy)
- Dec. 2021 “Measuring metal abundances in galaxy groups: challenges and prospects”, *Japan-Netherlands joint workshop: high-resolution X-ray spectroscopy of cosmic plasmas*, online
- Dec. 2020 “Chemical enrichment in galaxy clusters”, *Extragalactic universe with HE and VHE sources*, online
- June 2019 “Chemical abundances in the hot atmospheres of galaxy clusters, groups, and elliptical galaxies”, *Astrophysics of Hot Plasmas in Extended X-ray Sources*, ESAC, Madrid (Spain)
- March 2018 “Spatial distribution of metals in the intracluster medium”, *SnowCluster 2018: The Physics of Galaxy Clusters*, Snowbird, Utah (USA)
- Nov. 2017 “Elemental abundances and chemical enrichment in the intracluster medium”, *Clusters of Galaxies: Physics and Cosmology – International Space Science Institute (Workshop)*, Bern (Switzerland)

CONTRIBUTED TALKS

- Jan. 2024 “Discovery of X-ray inverse-Compton emission and estimate of the volume-averaged magnetic field in a galaxy group”, *243rd AAS meeting*, New-Orleans, LA (USA)
- Aug. 2023 “Robust detection of diffuse X-ray inverse-Compton emission in a galaxy group”, *High-*

resolution X-ray spectroscopy – A Chandra workshop, online

- June 2023 “Robust discovery of diffuse inverse-Compton emission in a galaxy group”, *The X-ray Universe 2023*, Athens (Greece)
- Feb. 2023 “Intracluster Medium Abundance Mapping with LEM”, *Science with the Line Emission Mapper: From Planets to Galaxies and Beyond*, Boston (USA)
- Nov. 2022 “The chemical universe: Enrichment in galaxy clusters unveiled by Athena”, *Exploring the Hot and Energetic Universe: The 3rd scientific conference dedicated to the Athena X-ray observatory*, online
- Sept. 2022 “An X-ray view of chemical enrichment in galaxy groups and clusters”, *Charting the metallicity evolution history of the Universe*, Catania (Italy)
- July 2022 “The cycle of metals in the infalling elliptical galaxy NGC 1404”, *The Physical Properties of the Groups of Galaxies*, Bertinoro (Italy)
- Feb. 2022 “Abundances in cluster outskirts with LEM”, *LEM Science Workshop*, online
- Jan. 2022 “Measuring metal abundance in the hot gas of galaxy groups and elliptical galaxies”, *50 years astronomical X-ray spectroscopy*, online
- Nov. 2021 “The cycle of metals in the elliptical galaxy NGC1404”, *14th ESA SCI-S Workshop (SSW)*, Aranjuez (Spain)
- Oct. 2020 “Metals (and dust) in the hot gas phase: From massive clusters down to massive galaxies”, *The Rise of Metals and Dust through Cosmic Times*, online
- July 2019 “Chemical abundances and enrichment in the intracluster medium”, *Tracing Cosmic Evolution with Clusters of Galaxies*, Sexten (Italy)
- March 2019 “Chemical enrichment of the atmospheric gas in clusters, groups, and massive galaxies”, *Physics of the Intra-Cluster Medium: Theory and Computation*, Budapest (Hungary)
- June 2017 “Radial distribution of metals in the hot intra-cluster medium as observed by XMM-Newton”, *The X-ray Universe 2017*, Rome (Italy)
- April 2017 “Radial metal abundance profiles in the intra-cluster medium of cool-core clusters, groups, and ellipticals”, *Physics of the Intra-Cluster Medium*, Beijing (China)
- May 2016 “CHEERS! The origin of heavy elements in galaxy clusters”, *SRON Science Days*, Delfsen (The Netherlands)
- July 2015 “The CHEERS project”, *The Metal Enrichment of Diffuse Gas in the Universe*, Sexten (Italy)
- May 2015 “CHEERS: Chemical enrichment in the hot gas of galaxy clusters seen through XMM-Newton EPIC”, *Spectroscopy of Cosmic Plasma in the Era of ASTRO-H*, Tokyo (Japan)
- June 2014 “An XMM-Newton view of Abell 4059”, *The X-ray Universe 2014*, Dublin (Ireland)

COLLOQUIA & SEMINARS

- Apr. 2024 “Chemical enrichment: from stars and galaxies to large-scale structures”, MIT Astrophysics Colloquium, MIT, Cambridge, MA (USA)
- Feb. 2023 “Chemical enrichment in the large-scale Universe”, X-ray Lab Journal Club, NASA/GSFC, Greenbelt, MD (USA)
- June 2022 “Chemical enrichment in the large-scale Universe”, LEAPS seminar, Leiden (The Netherlands)
- June 2022 “The Hot Universe”, co-presented with N. Clerc, Athena Summer School, Toulouse (France)
- March 2022 “Constraining the origin and models of chemical enrichment in galaxy clusters using the Athena X-IFU”, Athena Science Conversation, ASST meeting, online
- Feb. 2022 “Unveiling the chemical history of galaxy clusters and the Universe”, Athena X-ray Advances: ASST and ACO Science Webinar, online
- Oct. 2021 “The link between supernovae, supermassive black holes, and the large-scale Universe”,

GRAD Talks (Yildiz Technical University), [online](#)

- March 2021 “How to understand stars and supernovae by looking at... galaxy clusters”, *ESTEC breakfast seminar*, online
- Feb. 2021 “From stars to large-scale structures: chemical enrichment in the intracluster medium”, *Video-Seminar (Observatoire de Strasbourg)*, online
- Jan. 2021 “From stars to large-scale structures: chemical enrichment in the intracluster medium”, *IPAG seminar (Université Grenoble-Alpes)*, online
- Jan. 2021 “From stars to large-scale structures: chemical enrichment in the intracluster medium”, *GECO Café Club (Laboratoire d’Astrophysique de Marseille)*, online
- Sept 2020 “Dragonfly 44 (...and the dark matter content of ultra-diffuse galaxies)”, *ESTEC breakfast seminar*, online
- April 2020 “Discovery of a giant fossil cavity in the Ophiuchus galaxy cluster”, *ESTEC breakfast seminar*, online
- March 2020 “Does gravity really exist? Clues from galaxy clusters”, *ESTEC breakfast seminar*, Noordwijk (The Netherlands)
- Jan. 2020 “From supernovae to galaxies (and beyond): What metals in hot galactic and cluster atmospheres tell us”, *Kavli IPMU Colloquium*, Tokyo (Japan)
- Jan. 2020 “From supernovae to galaxies (and beyond): What metals in hot galactic and cluster atmospheres tell us”, *Hiroshima University Seminar*, Hiroshima (Japan)
- Jan. 2019 “Elemental abundances and chemical enrichment in the hot intracluster medium”, *MPE seminar*, Garching (Germany)
- Dec. 2018 “Metals in galaxy clusters and groups, and giant elliptical galaxies hot atmospheres: Recent improvements and current challenges of X-ray observations”, *CfA lunch talk*, Cambridge (USA)
- May 2018 “Elemental abundances and chemical enrichment in the hot intracluster medium”, *Hiroshima University Seminar*, Hiroshima (Japan)
- May 2018 “Understanding the chemical enrichment pattern in the hot haloes of massive ellipticals, groups, and clusters of galaxies”, *Kavli IPMU Colloquium*, Tokyo (Japan)
- March 2018 “From supernovae to galaxy clusters: Chemical enrichment in the hot intracluster medium”, *Lowell Observatory Colloquium*, Flagstaff, Arizona (USA)
- Feb. 2018 “Elemental abundances and chemical enrichment in the intracluster medium”, *IRAP Seminar*, Toulouse (France)
- April 2017 “From supernovae to galaxy clusters: Observing the chemical enrichment in the intracluster medium”, *PhD Colloquium*, Leiden (The Netherlands)
- Jan. 2017 “From supernovae to galaxy clusters: Chemical enrichment of the intra-cluster medium seen by *XMM-Newton*”, *Ortvay Colloquium*, Budapest (Hungary)
- Dec. 2013 “Probing chemical abundances in Abell 4059 using *XMM-Newton*”, *Argelander Institut für Astronomie Seminar*, Bonn (Germany)

POSTERS

- April 2024 “Measuring metal abundances in galaxy clusters and groups in the era of high-resolution X-ray spectroscopy”, *21st Meeting of the High Energy Astrophysics Division (HEAD) of the American Astronomical Society*, Waikoloa Village (Hawaii)
- March 2023 “Detection of diffuse inverse-Compton X-ray emission in a galaxy group”, *20th Meeting of the High Energy Astrophysics Division (HEAD) of the American Astronomical Society*, Waikoloa Village (Hawaii)
- March 2023 “Intracluster Medium Abundance Mapping with LEM”, *20th Meeting of the High Energy Astrophysics Division of the American Astronomical Society*, Waikoloa Village (Hawaii)

- June 2021 “Clusters, groups, and isolated galaxies: similar or different chemical enrichment histories?”, *EAS 2021 (European Astronomical Society Annual Meeting)*, Leiden (online)
- June 2021 “The cycle of metals in the elliptical galaxy NGC 1404”, *Galaxy Cluster Formation II (GCF 2021)*, ESO (online)
- Sept. 2019 “Metals in the intracluster medium”, *X-ray astronomy 2019: Current Challenges and New Frontiers in the Next Decade*, Bologna (Italy)
- Sept. 2018 “Abundance measurements in the intracluster medium: Consequences of spectral code improvements”, *Exploring the Hot and Energetic Universe: The second scientific conference dedicated to the Athena X-ray observatory*, Palermo (Italy)
- Sept. 2017 “Radial distribution of metals in the intra-cluster medium”, *The power of X-ray spectroscopy*, Warsaw (Poland)
- Dec. 2016 “Radial metal abundance profiles in the hot intra-group and intra-cluster medium”, *The Physics of Groups and Galaxy Properties therein*, Paris (France)
- May 2016 “Chemical enrichment in the hot intra-cluster medium seen with XMM-Newton/EPIC”, *XMM-Newton: The next decade*, ESAC, Madrid (Spain)
- May 2016 “The origin of heavy elements in galaxy clusters”, *71th Netherlands Astronomy Conference*, Nunspeet (The Netherlands)
- May 2015 “An XMM-Newton study of temperatures and abundances in Abell 4059”, *70th Netherlands Astronomy Conference*, Nunspeet (The Netherlands)
- Sept. 2013 “Chemical enrichment in clusters of galaxies from the XMM/Suzaku to the ASTRO-H era”, *4th ASTRO-H summer school*, Shuzenji (Japan)

Teaching & Outreach

- 2024 Seminar: “Making a winning proposal”, CRESST II Proposal Seminar, online
- 2023-now Mentoring three post-bacs students at NASA GSFC (career advice, tips in writing applications, etc.)
- 2022-now Co-lead of the LEM comms working group (managing [twitter](#) and [facebook](#) LEM accounts)
- 2022 Co-supervising MSc student (Teodora-Elena Bulichi): [LEAPS summer programme](#), ESTEC
- 2021 Supervising MSc students (Teresa Matamoro, Amanda Byström): [LEAPS summer programme](#), ESTEC
- 2021 Co-supervising MSc student (Dimitris Chatzigiannakis): MSc thesis, Leiden Observatory
- 2020 Supervising BSc student (Tora Arnesen): [LEAPS summer programme](#), ESTEC
- 2020 Co-supervising BSc student (Iga Kaczmarek): ESA internship, ESTEC
- 2019 “[Astronomy on Tap - Budapest](#)” (co-organiser), wide audience
- 2018 High energy astrophysics (guest lecturer), MSc level, Eötvös University
- 2018-2019 Co-supervising BSc student (Anna Görgei): BSc thesis, Eötvös University
- 2017-2018 Co-supervising BSc student (Ádám Boldog): BSc thesis, Eötvös University
- Sum. 2015 Co-supervising BSc student (Sinancan Kara): BSc thesis, SRON/Bogazici University
- 2014-2015 High energy astrophysics (Teaching assistant), MSc level, Leiden Observatory
- 2011-2013 Private student tutoring (Mathematics; physics), high school level, Brussels
- 2007-now Astronomy camp (teaching & animating, high school level), “[Jeunesse et Science ASBL](#)”, Modave (Belgium)

OUTREACH TALKS

- Sept. 2021 “The link between supernovae, supermassive black holes, and the large-scale Universe”, *Astronomy on Tap - Leiden*, Leiden (The Netherlands)
- Aug. 2020 “Black holes” (in French), *Jeunesse et Science*, Modave (Belgium)
- Dec. 2019 “Space telescopes” (in French), *Jeunesse et Science*, Modave (Belgium)
- July 2019 “Clusters of galaxies... and the surprises of their spectacular hot atmospheres”, *Astronomy on Tap - Budapest*, Budapest (Hungary)
- April 2019 “The dark side of matter”, *Astronomy on Tap - Budapest*, Budapest (Hungary)
- Dec. 2018 “Pluto (and the borders of the Solar System)” (in French), *Jeunesse et Science*, Modave (Belgium)
- Dec. 2017 “Stellar nucleosynthesis” (in French), *Jeunesse et Science*, Modave (Belgium)
- Jan. 2017 “A journey to the stars” (in French), *Heydeken rest home*, Brussels (Belgium)
- April 2016 “Clusters of galaxies” (in French), *Jeunesse et Science*, Modave (Belgium)
- Aug. 2014 “Clusters of galaxies” (in French), *Jeunesse et Science*, Modave (Belgium)
- April 2013 “Massive stars” (in French), *Jeunesse et Science*, Modave (Belgium)
- Aug. 2012 “The Sun across time” (in French), *Jeunesse et Science*, Modave (Belgium)
- Aug. 2011 “Dark matter” (in French), *Jeunesse et Science*, Modave (Belgium)
- Aug. 2010 “Death of stars” (in French), *Jeunesse et Science*, Modave (Belgium)
- April 2008 “Black holes” (in French), *Jeunesse et Science*, Modave (Belgium)

Department responsibilities & Initiatives

- 2020-2022 Member of the ESTEC SAC (Staff Association Committee), ESTEC
- 2020-2022 Member/coordinator of the YPAG (Young Professional Advisory Group), ESTEC
- 2020-2022 Organiser of weekly “breakfast seminars”, ESTEC
- Jan. 2021 Organiser of a mini-workshop on galaxy clusters (~15 participants from Dutch institutes), ESTEC
- 2019 Webmaster of the [Lendület Hot Universe Research Group](#) website, Budapest
- March 2019 LOC member of the “[Physics of the Intra-Cluster Medium: Theory and Computation](#)” conference, Budapest
- 2014-2017 Chair/organiser of regular “Galaxy clusters meetings”, Leiden Observatory
- 2014-2015 Organiser of the colloquium dinner events, SRON
- 2014-2017 Member of the “Social committee”, Leiden Observatory
- 2013-2014 Online update of arXiv preprints, Leiden Observatory website