

Curriculum Vitae

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1 CONTACT

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2 PUBLICATIONS

Full list of publications is available at NASA's Astrophysics Data System: http://adsabs.net/cgi-bin/nph-abs_connect?db_key=AST&author=Viitanen,+A. The most important publications are listed below.

1. **Viitanen, A.**, Allevato, V., Finoguenov, A., Shankar, F., Marsden, C. 2021, The role of scatter and satellites in shaping the large-scale clustering of X-ray AGN as a function of host galaxy stellar mass, MNRAS 507, 6148-6160, arXiv:2109.02667
2. Allevato, V., Shankar, F., Marsden, C., Rasulov, U., **Viitanen, A.**, Georgakakis, A., Ferrara, A., Finoguenov, A. 2021, Building Robust Active Galactic Nuclei Mock Catalogs to Unveil Black Hole Evolution and for Survey Planning, ApJ, 916, 34A, arXiv:2105.02883
3. **Viitanen, A.**, Allevato, V., Finoguenov, A., Bongiorno, A., Cappelluti, N., Gilli, R., Miyaji, T., Salvato, M. 2019, The XMM-Newton wide field survey in the COSMOS field: Clustering dependence of X-ray selected AGN on host galaxy properties, Astronomy & Astrophysics, 629, A14, arXiv:1906.07911
4. Keihänen, E., Kurki-Suonio, H., Lindholm, V., **Viitanen, A.**, Suur-Uski, A. -S., Allevato, V., Branchini, E., Marulli, F., Norberg, P., Tavagnacco, D., de la Torre, S., Valiviita, J., Viel, M., Bel, J., Frailis, M., Sánchez, A. G. 2019, Estimating the galaxy two-point correlation function using a split random catalog, Astronomy & Astrophysics, 631, A73, arXiv:1905.01133
5. Allevato, V., **Viitanen, A.**, Finoguenov, A., Civano, F., Suh, H., Shankar, F., Bongiorno, A., Ferrara, A., Gilli, R., Miyaji, T., Marchesi, S., Cappelluti, N., Salvato, M. 2019, Chandra COSMOS Legacy Survey: Clustering dependence of Type 2 active galactic nuclei on host galaxy properties, Astronomy & Astrophysics, 632, A88, arXiv:1910.08084
6. **Viitanen, A.** 2017, AGN clustering in the COSMOS field, MSc thesis, University of Helsinki, <https://helda.helsinki.fi/handle/10138/233980>

3 EDUCATION

PHD IN ASTRONOMY, UNIVERSITY OF HELSINKI

Started in December 2017, my dissertation is about the large-scale structure of the Universe, how it can be used to study the growth of supermassive black holes at the centers of galaxies and galaxy/black hole co-evolution. Namely, I'm interested in exploiting large and deep X-ray surveys and multiwavelength data in order to constrain the co-evolution through cosmological clustering of so-called Active Galactic Nuclei i.e. accreting massive black holes. I'm heavily involved in the Euclid mission, which will use the large-scale structure to extract cosmological information and to constrain dark matter and dark energy. The estimated thesis defence is in May 2023.

MASTER OF SCIENCE IN ASTRONOMY, UNIVERSITY OF HELSINKI

Completed in September 2017, in my thesis I studied the environments of X-ray selected AGN in the COSMOS field, and the connection between the AGNs and their host galaxies. The thesis was accepted with the second highest grade *eximia cum laude approbatur*, and I graduated with the highest grade 5/5.

BACHELOR OF SCIENCE IN PHYSICS, UNIVERSITY OF HELSINKI

Completed in December 2015, in my thesis I reviewed the large-scale structure of the Universe, and performed a clustering analysis on SDSS galaxies to investigate the different environments of galaxies in the red sequence and blue cloud.

4 TALKS

2022	contribution	Galaxies & AGN with the First Euclid data and beyond, Naples, Italy
2021	seminar	University of Helsinki Astrophysics seminar, Helsinki, Finland
2020	public talk	Kirkkonummen Komeetta, Kirkkonummi, Finland
2020	contribution	Euclid & AGN: a promising entanglement, SNS Pisa, Italy
2019	seminar	Cosmology group research report, Scuola Normale Superiore, Pisa, Italy
2019	contribution	Accretion History of AGN 2019, Miami, USA
2019	contribution	SMBH Environment and Evolution 2019, Corfu, Greece
2019	contribution	Euclid OU-LE3 meeting, Nice, France
2018	contribution	COSMOS Team Meeting 2018, Copenhagen, Denmark
2017	seminar	University of Helsinki Astrophysics seminar, Helsinki, Finland

5 TEACHING

I greatly enjoy teaching and interacting with the students, and have done teacher's assistant duties including preparing and grading exercises and exams, giving exercise sessions and/or workshops, as well as webpage management. Below is my completed teaching assistant duties in the University of Helsinki.

2022	Basics of Observational Astronomy II	undergraduate level
2021	Advanced Observational Astronomy I	graduate level
2020	Basics of Astronomy I (English)	undergraduate level
2019	High Energy Astrophysics	graduate level
2016	Basics of Astronomy II (Finnish)	undergraduate level
2015	Basics of Astronomy II (Finnish)	undergraduate level
2014	Basics of Astronomy I (Finnish)	undergraduate level

6 TRAINING

I have completed a total of 354 ECTS of studies at University of Helsinki, with a major in astronomy. Additional studies include cosmology and general computer science courses. Some of the highlights of my training are listed below.

NORDIC OPTICAL TELESCOPE STUDENTSHIP

In January 2021 until April 2022, I acted as a 2.56 m Nordic Optical Telescope research student in the Johannes Andersen Student Programme in La Palma, Spain. For a total of 59 nights, my duties as a support astronomer included interacting with program PIs, planning, scheduling, and carrying out astronomical observing runs. I gained valuable experience in optical low-mid resolution spectroscopy and imaging (ALFOSC/STAN CAM), high-resolution optical spectroscopy (FIES), as well as near-IR imaging/spectroscopy with the NOTCAM.

AHEAD X-RAY AND MULTI-WAVELENGTH SURVEYS SCHOOL

Held in Max-Planck Institute for Extraterrestrial Physics, in the school I learned about applications of modern multi-wavelength surveys in astronomy, along with hands-on exercises. Most usefully, the school provided me with a specific set of astronomical tools that I utilize today, along with theoretical methods including machine learning.

TONALE WINTER SCHOOL OF COSMOLOGY

I attended the school in 2018, where the topics discussed were black holes, weak lensing and large-scale structure, 21cm cosmology, and machine learning. The school reinforced my theoretical knowledge in the context of modern cosmological surveys both through lectures and hands-on project work.

7 EMPLOYMENT HISTORY

RESEARCHER, INSTITUTO DE FÍSICA DE CANTABRIA (IFCA)

From April 2022 onwards, I started working within the XMM2Athena project together with Prof. Francisco J. Carrera (IFCA) and Giorgio Lanzuisi (INAF-OAS Bologna). The goal is to assess the Athena Wide Field Imager survey source detection performance, using both a set of end-to-end simulations (SIXTE) and existing XMM/Chandra software. Furthermore, I work on optimizing tiling strategies of overlapping X-ray observations within XMM-Newton, and fitting physically motivated models to stacked X-ray AGN spectra in the serendipitous 4XMM catalog.

CONFERENCE ASSISTANT, UNIVERSITY OF HELSINKI

I helped in the organization of the Euclid Consortium 2019 meeting held in Helsinki, and provided technical assistance in the various sessions for hundreds of participants.

MUSEUM GUIDE, HELSINKI OBSERVATORY

During 2016–2018, I worked as a museum guide at the Helsinki observatory. I served customers of the visitor center and provided tours explaining astronomical concepts and history of astronomy in Helsinki to the public in the historical observatory building from 1834.

RESEARCH ASSISTANT, UNIVERSITY OF HELSINKI

During my undergraduate studies 2012–2017, I participated in three distinct research groups in Helsinki, namely the *Planetary Science Research* group led by Prof. Karri Muinonen, the *Extragalactic Astrophysics Research* group led by Prof. Peter Johansson, and the *Helsinki Euclid* group led by Prof. Hannu Kurki-Suonio.

8 LANGUAGE SKILLS

Finnish	mother tongue
English	excellent written and oral skills
Swedish	good written and oral skills
German	good written and oral skills
Spanish	basics

9 COMPUTER SKILLS

My main working environment is GNU/Linux with Python being my daily driver in terms of writing data analysis from smaller scripts to larger pipelines. Astronomical software that I frequent include topcat/stilts, astropy, iraf, and ds9. I have experience working with X-ray specific software astronomy, including XMM-SAS (especially edetect_stack) and CIAO (especially wavdetect), and spectral analysis through xspec/bxa. From working with Euclid-like datasets, I have experience in high-performance computing and parallelization through openMP and MPI in Python and C/C++. Other tools that I am fluent with and use daily include UNIX shells (POSIX and bash), L^AT_EX, git

(incl. GitHub and GitLab), and I have the working knowledge of SQL. Lastly, I have been exposed to basic Linux system administration and server management tasks through self-hosting (<https://aetviitanen.fi>), including Apache configuration and simple programming tasks in html, perl, and php.

10 HOBBIES AND OTHER INTERESTS

Rock climbing indoors and outdoors, playing the piano and the keyboards, programming as a pastime.