Nikolaj Bjerregaard Sillassen

Nikolaj-B-Sillassen | Nikolaj B. Sillassen | sillassennikolajb@gmail.com |
Nikolaj B. Sillassen

Education

2021 - 2023 M.Sc. Eng. in Earth and Space Physics and Engineering - Space Research at **Technical University of Denmark** (GPA: 10.5/12)

2018 - 2021 B.Sc. Eng. in Earth and Space Physics and Engineering at **Technical University of Denmark** (GPA: 8.22/12)

Main Interest Areas

- Astronomy and Astrophysics
  - Extragalactic astrophysics
  - Galaxy (proto)clusters/groups and evolution
- Data and image analysis
- Machine learning and artificial intelligence

Publications

Nikolaj B. Sillassen, Shuowen Jin, Georgios E. Magdis, et al. (Sept. 2022). "A galaxy group candidate at z ≈ 3.7 in the COSMOS field". In: *Astronomy & Astrophysics* 665, L7, p. L7. DOI: 10.1051/0004-6361/202244661. arXiv: 2209.05895 [astro-ph.GA].

Shuowen Jin, **Nikolaj B. Sillassen**, Georgios E. Magdis, et al. (Feb. 2023). "Massive galaxy formation caught in action at z ∼ 5 with JWST". In: *Astronomy & Astrophysics* 670, L11, p. L11. DOI: 10.1051/0004-6361/202245724. arXiv: 2212.09372 [astro-ph.GA].

Citations: 8

Telescope time

- KECK 2023B
  - Co-I: A Galaxy Overdensity at z ∼ 4 in COSMOS-Web
    Awarded time: 2 nights
- ESO P112
  - Co-I: Doubling the sample of Lya halos in accretion-fed galaxy groups at z>3: unveiling the origin of cold gas.
    Awarded time: 15h20m
  - Co-I: Unveiling Mpc-scale structure of a maturing protocluster at z=3.61.
    Awarded time: 6h
- ALMA Cycle 10
  - PI: Unveiling the Mpc-scale structure of a maturing protocluster at z=3.61.
    Awarded time: 6h30m

Projects

Master's Thesis - The nature of protoclusters Link to thesis

Exploring the nature of the first proto-clusters in our Universe. Master's thesis at DTU Space, investigating the physical properties and evolutionary tracks of the earliest protoclusters in the universe. Based off my publication on the protocluster I discovered. Supervised by: Prof. Georgios E. Magdis and Dr. Shuowen Jin. Grade: 12/12

Synthesis Project - GalCluster Link to repository Link to project report

Automatic Search for Galaxy Clusters by Overdensity Mapping. Synthesis project at DTU Space, creating a public program to automatically search for galaxy clusters, using existing datasets. Supervised by: Prof. Georgios E. Magdis and Dr. Shuowen Jin. Spawned a first-author publication in Astronomy and Astrophysics. Grade: 12/12

Bachelor's Thesis - Main Sequence in COSMOS2020 Link to thesis

Unveiling the scaling laws of galaxy evolution across cosmic time. Bachelor's thesis at DTU Space, investigating the main sequence of star forming galaxies in the as of unreleased COSMOS2020 catalogue. Supervised by: Prof. Georgios E. Magdis. Grade: 12/12

Introductory project - Scaling relations in EGS

Scaling relations and properties of galaxies across cosmic time. Introductory project at DTU Space, investigating the scaling relation and properties of galaxies in the Extended Groth Strip. Supervised by: Prof. Georgios E. Magdis. Grade: 12/12

Work Experience

Student assistant Aug 2022 - Jun 2023

Student assistant at DTU Compute assisting in administration, hosting of events and communication.

Project assistant/Webmaster Nov 2020 - May 2022

– Project assistant at Cyber Hub, assisting in various projects and administration
– Webmaster at Cyber Hub creating and managing public website.

Skills

Astrophysics	Astrophysics of galaxies, massive structures, and galaxy evolution
Programming	Experienced in Python & MATLAB, functional in R, C++, & C
Machine learning	Some experience with machine learning, data mining & neural networks.
Image analysis	Some experience with image analysis

Conferences and Talks

DAWN Summit 2022 - Presented GalCluster and Preliminary work on my first paper