

Inter-University Centre for Astronomy and Astrophysics
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November 28, 2024

Prof. Kirsten K. Knudsen and members of the search committee
Department of Space, Earth and Environment
Chalmers University of Technology, Gothenburg, Sweden

Dear Prof. Knudsen and members of the search committee,

I am writing to express my interest in the postdoctoral research position in galaxy formation and evolution at Chalmers University of Technology. I am excited by the opportunity to join your team in exploring the mechanisms that drive the evolution of early massive galaxies, focusing on both their local environments and internal processes. My background in galactic astrophysics and cosmology and my interest in computational and observational approaches make this position an excellent match for my skills and long-term research goals.

During my PhD at IUCAA, I extensively studied galaxy-halo interactions using hydrodynamical simulations, examining how baryonic astrophysical processes, such as AGN feedback, influence the evolution of dark matter haloes. While much of my work has focused on numerical simulations, I have also contributed to empirical studies, including a collaboration with Prof. Hector Marin on inferring cosmological parameters using eBOSS and generating mock DESI datasets. These experiences have deepened my appreciation for the power of observations in informing theoretical models.

This position's focus on mm/submm and radio observations resonates with my interest in multi-wavelength studies of galaxy formation. I am eager to bring my expertise to the investigation of high-redshift starburst galaxies and AGN, leveraging facilities like ALMA and VLA. Moreover, the empirical insights gained from this research will complement my broader goals of understanding the astrophysical processes that shape galaxy and halo evolution as detailed in my research statement.

In addition to research, I am enthusiastic about mentoring students and contributing to the collaborative environment at Chalmers. My experience supervising undergraduate interns during my PhD has honed my ability to guide early-career researchers in developing specific projects and achieving their academic goals.

I am particularly drawn to Chalmers for its vibrant research community and its commitment to fostering gender equality and diversity. I am excited about the opportunity to contribute to your group's research and to grow within this supportive academic environment.

Thank you for considering my application. I look forward to the opportunity to discuss how my background and interests align with the goals of your research group.

Sincerely,
Premvijay Velmani,
Senior Research Scholar,
IUCAA Pune, India