

## Shared Learning Association of Chapel Hill Lindgren Lecture

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### How The Webb Space Telescope Ushers in a New Era of Space Exploration

**LECTURER: Dr. Rongmon Bordoloi,**  
**Assistant Professor of Physics, North Carolina State University**  
**Friday December 2, 2022 at 11:15 am; by Zoom\*.**



Rongmon Bordoloi joined the Physics Department at North Carolina State University as an Assistant Professor in 2019. He received his PhD from ETH Zurich in 2013. After that he moved to the US as a postdoctoral fellow at the Space Telescope Science Institute until 2015 and then moved to Boston to join the Massachusetts Institute of Technology as a NASA Hubble Fellow. His work has been cited more than 4000 times since 2017. He is an expert observer, who routinely uses multi-wavelength spectroscopy and imaging (both from ground and space telescopes) in his research, giving him access to the new James Web Space Telescope (JWST). The JWST was launched on December 25, 2021. It is six times larger and 100 times more powerful than the Hubble Space Telescope (launched in 1990) and

includes far infrared capabilities missing in the Hubble. This permits collection of an entirely new realm of information. The power of the JWST is evident in many recently published images (<https://webbtelescope.org/resource-gallery/images>), but the one shown below of the Cartwheel Galaxy about 500M light years from us is especially dramatic (upper JWST; lower Hubble).

Rongmon will describe for us the incredible effort that went into creating the greatest space telescope of all time and the features that allow it to delve further into the past than astronomers and cosmologists have ever gone before. His research focusses primarily on the birth, growth, and death of galaxies far from our own Milky Way. He studies the extended gaseous halos around these galaxies,



especially the cycling of baryons into and out of them, the study of which has been greatly aided by the JWST. Baryons are heavy particles composed of three quarks, the simplest being the proton and neutron. Dr. Bordoloi works closely with theorists such as Adrienne Erickcek who gave a Lindgren Lecture in 2021. Such folks use numerical simulations to study galaxy formation. In addition to introducing us to this magnificent new tool for understanding the Universe, Rongmon will explain how elemental Baryon particle population densities near a galaxy provides him with a picture of how that galaxy formed and in what stage of its evolution it is as we view it hundreds of millions of years in the past.

\* Registration is now required to attend Lindgren Lectures by Zoom. A Google

forms link for registering for the Lecture will be on the Shared Learning website (<https://sharedlearning.us/>). Both members and non-members can register using this. Early registration is encouraged. The lecture will be limited to the first 100 participants who sign into the Zoom meeting, so arrive early. Registrants beyond the first 100 to sign in will be provided a link to the recorded lecture.