

Research Group:

Formation and Evolution of Galaxies

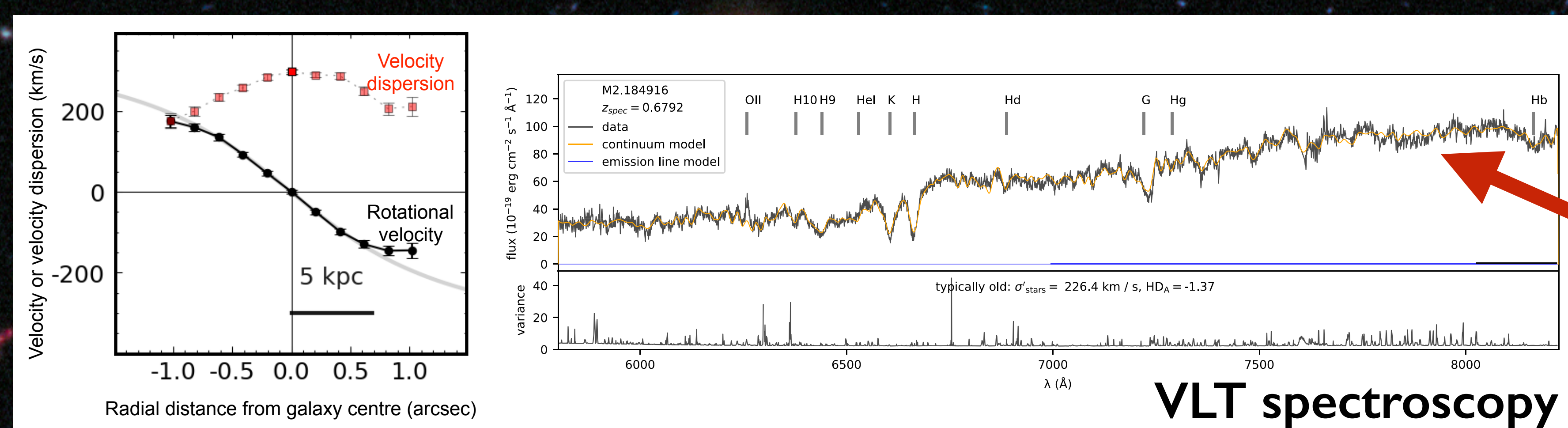
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Our research focuses on the question: **How did galaxies emerge in the early Universe, and how did they evolve to attain the enormous variety in properties we see in the present-day Universe?** This research field is mostly driven forward through the interpretation of cutting-edge data and requires a firm understanding of a broad range of areas in astrophysics (cosmology, radiation processes, stellar evolution, collisionless systems, plasma physics, ...)

Our research group uses the largest telescopes in the world (such as the Very Large Telescope, in Chile) and space telescopes (such as the Hubble Space Telescope) to observe high-redshift galaxies. We develop and apply advanced data analysis tools to interpret these data and reconstruct how galaxies formed and evolved in the context of the Λ CDM cosmological model.



Hubble Space Telescope image

The specific research topics we address are:

1. Star-formation and assembly histories of galaxies
2. The puzzling lack of star formation in the most massive galaxies
3. Identify and characterise the high-redshift progenitors of present-day galaxies

The following MSc thesis projects are available:

- Detect and interpret outflows of ionised gas, powered by supernovae, from galaxies
(Co-supervised by Dr. Caroline Straatman)
- Analysing photometry and spectroscopy of 10,000 galaxies in the present-day Universe to quantify their stellar populations
(Co-supervised by Dr. Francesco D'Eugenio)
- Cross-correlation clustering of high-redshift galaxies to infer their connection to the underlying Dark Matter distribution
(Co-supervised by Dr. Aaron Wilkinson)
- Construction and interpretation of dynamical models for massive, high-redshift disk galaxies and gravitational lenses
(Co-supervised by Dr. Francesco D'Eugenio)
- Identification and characterisation of Active Galactic Nuclei
(Co-supervised by Dr. Caroline Straatman)

Don't hesitate to bring up your own ideas!

International mobility can be arranged through our large, international network of collaborators in Germany, The Netherlands, Italy, U.S.A., Canada, Japan and Australia.