

Executive Summary Self-evaluation Astronomy 2016-2021

The past six years have been very productive for Leiden Observatory, with many exciting new developments in a wide range of scientific areas – from planet formation and exoplanets, astrochemistry, instrumentation development, galaxy formation and evolution, to cosmology. Analysis of the rich ALMA data, assisted by our local regional center ALLEGRO, revealed a wealth of beautiful and often surprising structures in dusty and gaseous disks around forming stars. ALMA has also been used to study feedback processes in galaxies and the most massive galaxies in the early Universe. Pioneering observational techniques have pushed exoplanet studies to new heights – with trailblazing discoveries of accreting protoplanets, multi-planet systems around young Suns, and new atmospheric species including the first isotopes. The first three Gaia data releases, led by Leiden astronomer Anthony Brown, continue to have an enormous impact in world-wide astronomy. LOFAR is starting to reach its full potential, producing the best radio maps of the low frequency sky. The KiDS weak lensing survey produced intriguing results on the large-scale distribution of dark matter, while simulations such as EAGLE become increasingly more realistic and sophisticated, generating an enormous impact in the field of galaxy evolution.

Over this period, Leiden Observatory has grown significantly, in number of undergraduate students, PhD students, postdocs, and scientific staff, with the last also growing towards a healthy gender balance with ten new excellent female hires. Currently, five staff members are active ERC Advanced Grant holders – a record for any European astronomy department. Among many prizes for Leiden Observatory members, Ewine van Dishoeck has been awarded the Kavli Prize, and Ignas Snellen the NWO Spinoza Prize. In the meantime the main branch of the Netherlands Institute for Space Research, SRON, has moved to the Leiden campus, invigorating collaborations. Public engagement has grown stronger than ever, with many projects and programs on local, national, and international levels.

The scientific future is bright. James Webb Space Telescope is producing its first exciting results and is expecting to continue to do so for the foreseeable future. The ESA Euclid mission will become an important pillar for cosmological studies, and Leiden scientists are eagerly anticipating the Extremely Large Telescope – in particular for METIS for exoplanet and planet formation studies. Also, with new funding opportunities from the national *Sector Plans*, we will significantly invest in data science and artificial intelligence.

These successes and growth also come with challenges. The Covid period has been very difficult for many, while social cohesion has become less self-evident. To help remedy this, we have started initiatives to increase well-being, diversity and inclusion. Near the completion of this self-assessment study, it became public knowledge that a prominent member of our staff has been barred from the Leiden University premises for unacceptable behaviour¹. Since early 2022, this case has been hanging as a dark cloud over our institute. It will come as no surprise that social safety, and prevention of harassment in any form, is at the focal point of Leiden Observatory management. We will start a culture process for the institute, including coaching and training, for which a plan and timeline will be in place by early 2023.