

General Information

The Vision of the Armagh Observatory is:

“To build on its position as a thriving astronomical research institute, and to continue to expand our understanding of the Universe and of humanity’s place in it.”

The Mission is:

“To advance the knowledge and understanding of astronomy and related sciences through the execution, promotion and dissemination of astronomical research nationally and internationally in order to enrich the intellectual, economic, social and cultural life of the community.”

The Armagh Observatory (see <http://star.arm.ac.uk/>) is a modern astronomical research institute, the oldest scientific institution in Northern Ireland. Founded by Archbishop Richard Robinson in 1789 as part of his vision to see the creation of a university in the City of Armagh, the Observatory stands close to the centre of the City of Armagh together with the Armagh Planetarium in approximately 14 acres of attractive, landscaped grounds known as the Armagh Astropark. The Observatory Demesne, Grounds and Astropark, which are developed and maintained by Observatory staff, include scale models of the Solar System and the Universe, two sundials and two historic telescopes, as well as telescope domes and other outdoor exhibits (see <http://star.arm.ac.uk/astropark/>). A new public outreach facility, the Human Orrery (see <http://star.arm.ac.uk/orrery/>), is located close to the historic main building of the modern Observatory. In addition, the Observatory’s Library and Archives, and its specialist collection of scientific instruments and artefacts associated with the development of modern astronomy over more than two hundred years, rank amongst the leading collections of their kind in the UK and Ireland.

The principal function of the Armagh Observatory is to undertake original research of a world-class academic standard that broadens and expands our understanding of astronomy and related sciences. In recent years key programmes have focused on Stellar Astrophysics, the Sun, Solar System astronomy, and Solar System – Earth relationships including the Sun’s influence on climate and the impact of interplanetary dust, comets and asteroids on the Earth. Other activities include maintaining the unique, more than 215-year long meteorological series and data-bank (<http://climate.arm.ac.uk/>), the longest in the UK and Ireland from a single site, and playing a key role together with the Armagh Planetarium in promoting public understanding of astronomy and related sciences.

There is currently a fluctuating population of around 30 research staff including students and short-term visitors, who are supported by a pool of technical and administrative support staff: two computer/IT specialists, one librarian/public relations officer, the director’s PA/group secretary, one finance officer, and a senior administrator shared 50% with the Armagh Planetarium. The 14 acres of landscaped Observatory Grounds and Astropark and the daily meteorological readings are maintained by a senior grounds/meteorological support officer, responsible for taking the daily meteorological readings, and an assistant groundsman.

Research interests of Observatory staff are currently focused on four main areas of astronomy, namely:

- **Solar-System Science:** including celestial mechanics, planetary science, the dynamics of meteors and other small bodies, the origin of comets and trans-Neptunian objects (TNOs), and the interrelationships between comets, asteroids, meteoroids and interplanetary dust, and near-Earth objects (NEOs);
- **Solar Physics:** including the dynamic solar atmosphere, the chromosphere and corona, and Sun-Earth relationships including climate;

- **Stellar Astrophysics:** including hot stars, massive stars, stellar winds, degenerate and helium stars, asteroseismology, studies of binary stars (including their origins, physical properties, population studies, and the physical properties of ultra-compact binaries), and constraints on gamma-ray burst progenitors; and
- **Galactic Astronomy:** including brown dwarfs, star formation, globular and open clusters.

In addition, Observatory staff participate in a vibrant programme of Science in the Community, involving astronomy education and public outreach via lectures, popular astronomy articles and interviews with the press, radio and television. Further details concerning recent and current research interests of Armagh Observatory staff may be obtained from the Observatory web-site, at <http://star.arm.ac.uk/>.

Armagh Observatory staff regularly obtain telescope time on national and international facilities, such as the ESO Very Large Telescope (<http://www.eso.org/outreach/ut1f1/>) and various spacecraft missions (such as SoHO, SDO, Hinode, XMM-Newton, and HST), and attract research grants from various grant awarding bodies (e.g. the STFC, the Royal Society, the Leverhulme Trust, British Council etc). The Observatory is also a member of the UK SALT Consortium (UKSC), providing access to the 11-metre diameter Southern African Large Telescope (SALT: see <http://star.arm.ac.uk/SALT/>), located at the Sutherland Observatory, South Africa. Complementing these international facilities, restoration of the Observatory's historic telescopes has brought opportunities to reintroduce some professional observing from Armagh, while new computer and camera technology has enabled a variety of new automatic observational programmes to be introduced from Armagh, recording data autonomously whenever the sky is clear.

Technical equipment at Armagh, which is used primarily for numerical analysis, computer modelling and data reduction, has been funded by the STFC, Leverhulme Trust, and the DCAL. Facilities presently comprise a number of iMac workstations Linux workstations and peripherals. In addition, the Observatory has 80 TB of on-line storage capacity obtained during 2010 with additional funding from the DCAL. The internal network is a 1 Gbps backbone ethernet linked with switched hubs. The external network is connected to the Joint Academic Network (JANET) through a 100 Mbps link provided through the Observatory's participation in the Northern Ireland Regional Area Network (NIRAN). The Armagh Observatory also has access to the Stokes Supercomputer at the Irish Centre for High-End Computing (ICHEC). These computer facilities are used mainly for computationally intensive research projects in observational and theoretical astrophysics (including data reduction and modelling) in areas such as solar physics, stellar atmospheres, stellar winds, radiation hydrodynamics, numerical magneto-hydrodynamics, and solar system dynamics.

In addition to the institution's primary research role, the Observatory has an important responsibility to maintain and preserve the fabric of the historic buildings, the library, historic books and archives, and the collection of scientific instruments and other artefacts built up over nearly 220 years of continuous astronomical activity in Armagh. The main historic buildings of the Observatory have unique architectural features and house one of the most valuable collections of scientific books, instruments and archives in Northern Ireland. Full details about the Armagh Observatory and its current research and other activities can be obtained from recent annual reports, at <http://star.arm.ac.uk/annrep/>.