

Current Status of the Lulin Observatory

Hung-Chin Lin (林宏欽), Wen-Ping Chen (陳文屏), K. H. Chang (張光祥), Ming-Hsin Chang (張明新),
Yung-Hsin Chang (張永欣), Zhi-Wei Zhang (張智威), J. S. Shi (石俊雄), and J. C. Du (杜進全)

Institute of Astronomy, National Central University

No. 300, Jung-Da Rd., Jung-Li City, Tao-Yuan, Taiwan 320, R.O.C.



Abstract

After more than ten years of development, the Lulin Observatory is now a full-fledged scientific compound for astronomical observations and other experiments. Among the scientific activity, the Lulin One-meter Telescope (LOT) sees its first light in September 2002. The Taiwan-America Occultation Survey (TAOS) telescope array is about to begin routine operation. The Lulin Emission-Line Imaging Survey (LELIS) has started its observing queue. This paper overviews the current status of the site, its operation and management, and future planning at the Lulin Observatory.

Introduction

The NCU (National Central University) LuLin Observatory is located at Mt. Front LuLin, 120° 52' 25" E and 23° 28' 07" N, a 2862-m peak in the Yu-Shan National Park. The construction of first observatory was finished on January 14, 1999. The initial study of LuLin site was started since late 1989. Later on, a three-year project was founded by the National Science Council (NSC) to support the development of a modern seeing monitor for this site survey study from 1990 through 1993. The average seeing of LuLin site is about 1.39 arc-second. The sky background of this site is 20.72 mag/arcsec² in V band and 21.22 mag/arcsec² in B band.

With a 4-year funding supported by the MoE and NSC Excellency project, the NCU has built up the facilities at the LuLin Observatory. This effort, which is coordinated by the Institute of Astronomy of the National Central University, focus on the road construction, water and power supplies, communication links and other items necessary for the establishment and maintenance of the Lu-Lin Observatory as an inter-university astronomical facility for research and education.



The Lulin Observatory Control Center (LOCC)

The Lulin Observatory Control Center (LOCC) is funded by the MoE and NSC Excellency project and operated by the Institute of Astronomy, National Central University. LOCC operates one major nighttime telescope – LOT, hosts the facilities of consortia. As a national facility, LOCC's telescopes are open to all astronomers regardless of institutional affiliation.

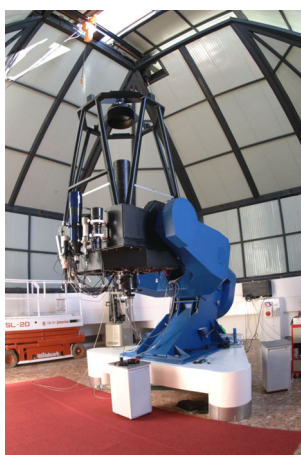
The Lulin One-meter Telescope (LOT)

The Lulin One-meter Telescope (LOT) is the newest and largest telescope in Taiwan. LOT is equipped with the latest scientific instruments for astronomical imaging. The imaging cameras employ highly sensitive arrays of electronic detectors. LOT's purpose is to advance all aspects of Taiwan ground based astronomical research and to provide our best ground-based astronomical telescope to the nation's astronomers, to promote public understanding and support of science.

Observing time of LOT is allocated on a seasonal base, January-March (I), April-June (II), July-September (III), and October-December (IV).

The major LOT telescope scientific observations in 2003 are as follows,

1. Low-mass X-ray Binary monitoring program
2. Photometric observations of Jovian Trojans
3. Variability of Middle-Aged Open Clusters
4. Photometric Monitoring of Galactic Open Clusters
5. The Morphology and Environment of Seyfert Galaxies



LOT vs. VLT

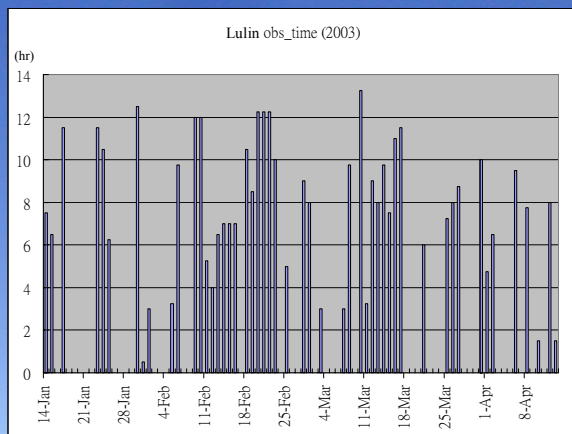
A very nice galaxy that is called like this due to its stunning appearance. All the tiny little stars around the galaxy are globular clusters. There is a very good photograph (to our knowledge the best earthbound photograph of this galaxy) made with the VLT telescope.

We think that our image compares very well with this image regarding the fact that the 1m LOT has cost much less than 1/100 of the VLT cost.



Observing hours statistic in the first season of 2003

A nightly report system is created since 14 Jan 2003. Now we have the actual observing hours every night to estimate the weather condition of Lulin site. The total observing hours from 1-Jan to 12-Apr is 429.3 hours.



Future Development

As an inter-university astronomical facility for research and education, members currently involved in this joint venture are Central University (which is operating the Lu-Lin Observatory), Tsinghua University and Taiwan University, but we have the vision that many more universities will be included in this consortium in the near future. We believe that the proposed national infrastructure will promote Taiwan's role in many first-class astronomical projects—from solar system astronomy to cosmology—in view of its capability to provide key longitudinal and time coverage.

Acknowledge

This work would not have been possible without the effort of a lot of people working on developing the site. We wish to thank the long term supporting from the National Science Council of Taiwan, the Ministry of Education of Taiwan and the National Central University.

Reference

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