

Telescope fiber optic array unit



Overview

Each unit telescope is comprised of: a 1" thick, 30" diameter spherical primary mirror on a support with tip-tilt actuators for alignment and focus; a refractive prime focus corrector (PFC) that corrects spherical aberration over an 8 arcmin field; a fiber at prime focus that. Each unit telescope is comprised of: a 1" thick, 30" diameter spherical primary mirror on a support with tip-tilt actuators for alignment and focus; a refractive prime focus corrector (PFC) that corrects spherical aberration over an 8 arcmin field; a fiber at prime focus that. light from thousands of small telescopes at centrally located high-resolution spectrometers. LFAST aims to use mass replication of small, self-contained telescope systems to provide ELT sized collecting area and spectroscopic capabilities at a drastically reduced price. However, fundamental. The concept for the Large Fiber Array Spectroscopic Telescope (LFAST) (Angel et al, these proceedings) is to collect the light from a target object using thousands of individual, small, low-cost telescopes, and bring it via optical fibers to a high resolution ($R=150,000$) spectrograph. We present the throughput budget of our first prototype unit across 400–1700 nm, in which we examine the optical train from the 0.



Article Content

Status of The Large Fiber Array Spectroscopic Telescope: A new 3.5m ...

In this talk I give the status of fabrication and testing of this system, and describe our plans to deploy it to a mountain top observatory site. I will also present future plans for larger multi-20

Large Fiber Array Spectroscopic Telescope: Optical Design for a ...

The primary goal of the LFAST prototype is to demonstrate a telescope design that can be rapidly and cost-effectively replicated to achieve a 1200 m² collecting area and match the

LFAST, the Large Fiber Array Spectroscopic Telescope

The projected cost of each unit telescope, when mass produced by the thousand, would then be approximately \$8,000. The telescopes will be mounted in the open in groups of 20 located 12 m

Application of Multicore Optical Fibers in Astronomy

Of all photonic technologies, optical fibers have been used most extensively in astronomical instrumentation. The most common application for fibers is for light transport from the focal plane of a

LFAST, the Large Fiber Array Spectroscopic Telescope

A telecentric lens is used to reimage the lens array at the entrance slits of two echelle spectrographs. Together, these two cover simultaneously the full 390 nm-1700 nm spectral range of the star being

The Large Fiber Array Spectroscopic Telescope: optical system ...

She is currently working on the Large Fiber Array Spectroscopic Telescope (LFAST), focusing on the design, testing, and calibration of the LFAST fiber feed system, as well as science case planning.

Optical Fiber Array Assemblies for Space Flight on the Lunar ...

For LOLA, a five fiber array was developed for the receiver telescope to maintain precise alignment for each of the 200/220 micron optical fibers collecting 1,064 nm wavelength light being

The Large Fiber Array Spectroscopic Telescope: fiber feed and ...

MARVEL consists of an array of four 80 cm telescopes linked through optical fibers to a single high-resolution echelle spectrograph, optimized for extreme-precision radial velocity

Spectroscopic Telescope

1. GOALS FOR LFAST The Large Fiber Array Spectrographic Telescope, LFAST, is a new type of telescope with very large collecting area for very high-resolution spectroscopy, designed for

A Fiber Arrayed Solar Optical Telescope (FASOT)

This paper introduces the key concepts relating to the Fiber Array Solar Optical Telescope (FASOT) project. The various component parts are presented and the paper describes how these elements

LFAST, the Large Fiber Array Spectroscopic Telescope

The Large Fiber Array Spectroscopic Telescope (LFAST) concept involves the utilization of 2640 individual, 0.76 m "unit telescopes" to collect light from a target object. Through optical fibers, the

The Large Fiber Array Spectroscopic Telescope

The Large Fiber Array Spectroscopy Telescope (LFAST) will combine thousands of small "unit telescopes" to create an array with collecting area greater than that of the GMT, TMT, or E-ELT, but

The Large Fiber Array Spectroscopic Telescope: prime focus corrector optics

The Large Fiber Array Spectroscopic Telescope (LFAST) is designed to be a cost-efficient way to provide a large collecting area for spectroscopy by duplicating large numbers of small

A Fiber Arrayed Solar Optical Telescope (FASOT)

Yunnan Astronomical Observatory, Chinese Academy of Sciences, Kunming, Yunnan 650011, China Abstract. This paper introduces the key concepts relating to the Fiber Array So-lar Optical Telescope

The Large Fiber Array Spectroscopic Telescope: fiber feed fabrication ...

The Large Fiber Array Spectroscopic Telescope (LFAST) project seeks to construct large arrays of small, individual fiber-fed telescopes for very high resolution spectroscopy.

An integrated field unit with thousands of optical fibers for a solar ...

A fiber IFU with 8064 fibers is designed and manufactured for the Fiber Arrayed Solar Optical Telescope. 8064 fibers are divided to two 2D arrays for different polarization states and 12 pseudo

Large Fiber Array Spectroscopic Telescope: Optical Design for a ...

Considering that the unit telescope is to be replicated thousands of times, reducing the manufacturing cost per telescope is essential. The aim of the described design is to achieve this goal, with strong

Design and development of an optical-fibre-based Integral Field Unit ...

An optical-fibre-based Integral Field Unit (IFU) has been developed for the Inter-University Centre for Astronomy and Astrophysics (IUCAA) Faint Object Spectrometer and Camera (IFOSC), the main

Prospects for Fibreoptics in Future Telescope Instrumentation

The importance and applied use of fibreoptics in astronomy has received rapidly growing attention in the past 5 years, particularly for instrumentation where the lightness, flexibility and simplicity of fibres,

The Large Fiber Array Spectroscopic Telescope: optical design of the ...

The concept for the Large Fiber Array Spectroscopic Telescope (LFAST) (Angel et al, these proceedings) is to collect the light from a target object using thousands of individual, small, low-cost

Large Fiber Array Spectroscopic Telescope: Optical Design for a ...

Abstract The Large Fiber Array Spectroscopic Telescope (LFAST) concept involves the utilization of 2640 individual, 0.76 m “unit telescopes” to collect light from a target object. Through optical fibers,

Analysis of telescope array receivers for deep-space inter-planetary ...

An array of relatively smaller-sized telescopes electrically connected to form an aggregate aperture area equivalent to a single large telescope is a viable alternative to a monolithic

The Large Fiber Array Spectroscopic Telescope: opto-mechanical

This paper describes the preliminary mechanical design and optomechanics of LFAST, the Large Fiber Array Spectroscopic Telescope. The $1,200\text{ m}^2$ array comprises 132,

Contact Us

For more information, pricing, or custom solutions, please contact us:

Website: <https://umele-pestovani.eu>

Email: info@umele-pestovani.eu

Phone: +49 152 287 6349

Address: Neue Mainzer Straße 66-68, 60311 Frankfurt am Main, Germany

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