

MODERN OPTICAL TELESCOPES

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During a quarter of century the total area of mirrors of all astronomical telescopes working in the optical range of wavelengths has increased by almost ten times. The modern instruments allow getting more detailed images of objects than their predecessors; in particular, the “atmospheric barrier” of the image quality has been overcome. Why the so fast progress became possible? How are the new telescopes made? What projects will be realized in the coming years? Just these questions are discussed in the book. The historical continuity is traced of ideas determining development of the telescope making.

The book is intended for students and graduates specializing in astronomy, specialists in adjacent fields and a wide circle of the people interested in natural sciences.

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Spelling of the foreign surnames which have been not specified in the list of the literature

Resolution, Overcoming Resolution Limitations, Space Telescopes, Adaptive Optics, Recording Telescope Data, Modern Optical Telescopes

Operation of a telescope, Types of telescope, Alternative wavelengths. The telescope is an instrument which collects and analyzes the radiation emitted by distant sources. Light gathering. The primary function of a telescope is that of light gathering. As will be seen below, resolution limits on telescopes would not call for an aperture much larger than about 30 in (76 cm). As for optical telescopes, the maximum size of reflecting telescope mirror remained at around 1m diameter, so telescope manufacturers started making segmented mirrors that grew to the size of 10m of diameter. Plans for building future telescopes on both earth and in space are already underway, and many of them strive to break previous records in pretty spectaculars - European For modern large telescopes with flexible monolithic or segmented primary mirrors and also flexible structures this technique is indispensable to reach a performance which is either diffraction limited for an operation in space or limited by the atmosphere for an operation on the ground. The active optics system is the fundamental optical characteristic of the ESO New Technology Telescope (NTT) and Very Large Telescope (VLT). The NTT pioneered this system.