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## The Visible and Infrared Survey Telescope for Astronomy (VISTA): Design, technical overview, and performance

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### Abstract

The Visible and Infrared Survey Telescope for Astronomy (VISTA) is the 4-m wide-field survey telescope at ESO's Paranal Observatory, equipped with the world's largest near-infrared imaging camera (VISTA IR Camera, VIRCAM), with 1.65 degree diameter field of view, and 67 Mpixels giving 0.6 deg<sup>2</sup> active pixel area, operating at wavelengths 0.8–2.3 μm. We provide a short history of the project, and an overview of the technical details of the full system including the optical design, mirrors, telescope structure, IR camera, active optics, enclosure and software. The system includes several innovative design features such as the *f*/1 primary mirror, the dichroic cold-baffle camera design and the sophisticated wavefront sensing system delivering closed-loop 5-axis alignment of the secondary mirror. We conclude with a summary of the delivered performance, and a short overview of the six ESO public surveys in progress on VISTA.

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Visible and Infrared Survey Telescope for Astronomy. Part of. Paranal Observatory. VISTA observations will support research in many astronomical areas. Within our galaxy, VISTA is expected to find many new brown dwarf stars and be able to test ideas about the nature of dark matter. One VISTA survey is designed to find and study huge numbers of variable stars in our galaxy by taking images of the same areas of sky at different times. Using VISTA data astronomers will be able to map the structure of our galaxy in much more detail than ever before. Another VISTA survey will study our neighbouring small galaxies, the Magellanic Clouds, and their surroundings. VISTA data will als VISTA works at near-infrared wavelengths and is the world's largest survey telescope. Its large mirror, wide field of view and very sensitive detectors are revealing a completely new view of the southern sky. The telescope is housed on the peak adjacent to the one hosting the ESO Very Large Telescope (VLT) and shares the same exceptional observing conditions. VISTA has a main mirror that is 4.1 metres across. Project management for the telescope design and construction was undertaken by the Science and Technology Facilities Council's UK Astronomy Technology Centre (STFC, UK ATC). The telescope was provisionally accepted by ESO on 10 December 2009 and is now operated by ESO. Science goals. Devoted to surveys. The Visible and Infrared Survey Telescope for Astronomy (VISTA) is the 4-metre wide-field survey telescope at ESO's Paranal Observatory, equipped with the... The Visible and Infrared Survey Telescope for Astronomy (VISTA): Design, Technical Overview and Performance. Item Preview. There Is No Preview Available For This Item. This item does not appear to have any files that can be experienced on Archive.org. Please download files in this item to interact with them on your computer. We conclude with a summary of the delivered performance, and a short overview of the six ESO public surveys in progress on VISTA. Notes. Latex, 28 pages, 14 figures. v2 matches A&A published version, minor additions/corrections from v1.