

Testing astronomical optical standards of locally made parabolic mirrors for Newtonian Reflecting Telescopes

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A study of mirror making was initiated with the aim of designing a Newtonian reflecting telescope. Parabolic mirror of 15 cm aperture and 1.49 m focal length was made utilizing two identical Soda-lime glass disks. One side of a flat glass disk (one selected for the mirror) was grinded into the parabolic concave shape using series of Silicon Carbide (SiC) and Aluminum Oxide (Al_2O_3). The grinded mirror was polished using Pitch (Phenols, Polycyclic aromatic hydrocarbons) and Ferric Oxide (Fe_2O_3). Focal length of the mirror was measured after each grinding process. Uniformity of the concave shape figured in the mirror was tested using Foucault knife-edge test. Deviations from the required parabola were investigated by employing Millies-Larcroix method. It was found that the parabolic shape of the glass is satisfying astronomical optical standards confirming the quality of mirror prepared by this method.

Keywords: Glass disk, Silicon carbide, Foucault knife-edge test, Millies-Larcroix method, Parabolic shape

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