Introduction to the Chinese Giant Solar Telescope

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In order to detect the fine structures of solar magnetic field and dynamic field, an 8 meter solar telescope has been proposed by Chinese solar community. Due to the advantages of ring structure in polarization detection and thermal control, the current design of CGST (Chinese Giant Solar Telescope) is an 8 meter ring solar telescope. The spatial resolution of CGST is equivalent to an 8 meter diameter telescope, and the light-gathering power equivalent to a 5 meter full aperture telescope. The integrated simulation of optical system and imaging ability such as optical design, MCAO, active maintenance of primary mirror were carried out in this paper. Mechanical system was analyzed by finite element method too. The results of simulation and analysis showed that the current design could meet the demand of most science cases not only in infrared band but also in near infrared band and even in visible band. CGST was proposed by all solar observatories in Chinese Academy of Sciences and several overseas scientists. It is supported by CAS and NSFC (National Natural Science Foundation of China) as a long term astronomical project.