



Professor Shrinivas Kulkarni
Director, Caltech Optical
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Directors Yongtian Zhu, Xuefei Gong, & Drs. Xinnan Li, Chen Xu
Nanjing Institute of Astronomical Optics & Technology
National Astronomical Observatories, CAS
188 Bancang Street, Nanjing 210042
People's Republic of China

Dear Directors Zhu, Gong, and Drs. Li and Xu:

Recently, California Optical Observatories (COO), announced the first light of the Zwicky Transient Facility (ZTF) – a camera with a field-of-view of 47 square degrees (!) behind the Oschin Schmidt 48-inch telescope (Schmidt camera) of Palomar Observatory. In the field of time domain astronomy (TDA), ZTF is widely seen as a stepping stone to the Large Synoptic Survey Telescope which is a flag-ship facility of the US astronomical community and expected to be fully commissioned by 2022. In recognition of the key role played by ZTF, in 2013, the US National Science Foundation awarded COO \$9M towards the completion of ZTF.

In mid-2016, COO and ZTF were in danger of a severe schedule slip because of vendor non performance to deliver a large (1.35-meter diameter) aspheric optic. This optic is essential to obtain the best image quality across the large ZTF field. In an excellent example both optician's skill and organizational cooperation, Nanjing Institute of Astronomical Optics & Technology (NIAOT), was able to deliver the required optic on time, with excellent optical performance.

Such a large aspheric lens requires both patience and skill to fabricate. NIAOT was able to meet the contradictory goals of urgency and patience in a very professional way. Thanks to the commitment of NIAOT management (as well as organizational cooperation with the National Astronomical Observatories of China – NAOC), the fabrication team was able to begin work almost immediately. To ensure good progress, we made several unusual requests, including raw interferograms, raw notes from design meetings, and detailed information about the null lens design and validation. NIAOT cooperated fully with these requests, providing the requested material promptly and clearly. In the end, the lens met both our stringent optical requirements and our ambitious schedule, enabling the timely start of ZTF science observations.



Please convey my sincere thanks to the entire NIAOT team. We will shortly send a high quality print of our ZTF “*first light*” image -- 47 square degree of sky centred on the Orion belt, along with signatures of team members. We hope that you will find the picture attractive enough to showcase it in your institution. We will also send a copy to Deputy Director Suijan Xue, NAOC (Beijing) who was very helpful in facilitating the discussions between COO and NIAOT.

Finally, the ZTF project will set aside funds to pay for an undergraduate student chosen by NAOC to come and work with the project during summer time. The student will have to apply to Caltech’s famed SURF (Summer Undergraduate Research Fellowship)¹. This program will last during the 3-year period of ZTF (summers of 2018--2020). The program, being a global program, is very competitive and I would advise that an internal competition be held across NAOC (Nanjing, Beijing) by say October and the winner be put in touch with Dr. Lin Yan so that a compelling application (which is due in February) can be submitted.

Once more, thank you for all you and your organization has done in this important contribution to ZTF. We hope that the forthcoming picture will both be a token of our gratitude and serve as a reminder that cooperation and good will between institutions always leads to wonderful outcomes.

Sincerely,

A handwritten signature in blue ink, appearing to read 'SK', is written over a horizontal line.

Professor Shrinivas Kulkarni
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¹ <http://sfp.caltech.edu/programs/surf>