



Beyond the World's Largest Telescopes: New Technologies and New Opportunities

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The World's Largest Telescopes (WLTs) for remote sensing, communication, and astronomy will soon be a few 10's of meters in diameter. Although the opto-mechanical requirements for such large coherent optical systems are severe, after nearly a generation of planning, the construction phase for 20-30m aperture optical/IR telescopes has begun. These WLTs are close relatives to existing largest optics like the Keck Telescopes on Hawaii. Compelling scientific questions, such as detecting life in the nearby Universe, are already driving the development of more and larger aperture telescopes. Meta-materials and additive manufacturing combined with fast information processing will make large optics beyond the Keck-era feasible at much lower cost. This talk presents some of the physical principles, and engineering progress that illustrate how 100m-class telescopes could be built within just a few years.

SHORT BIO:

Jeff Kuhn is a senior Humboldt prize winner and Sloan fellow. He joined the University of Hawaii Institute for Astronomy in 1996, where he is a Regents Prize professor. He was the founding director of the Institute for Astronomy's Advanced Technology Research Laboratories on Maui, for a decade. His PhD is in Physics from Princeton but he works often in astrophysical problems and on unusual optical and detector systems. Some of his ideas are at the heart of telescopes like the Giant Magellan and the US National Science Foundation's \$340M Daniel K. Inouye Solar Telescope, for which he is a co-principle investigator. He is the principle founder of the PLANETS Foundation and MorphOptics Inc.