

W. M. KECK OBSERVATORY and ALPAO to Develop Next Generation State-of-the-Art Adaptive Optics System for 10-meter Telescope in Hawaii

Maunakea, Hawaii (USA) and Grenoble (France) – July 18th, 2022 – W. M. Keck Observatory and ALPAO, world leader in the field of deformable mirrors and adaptive optics, have partnered to develop the next generation, state-of-the-art adaptive optics system for the Keck II 10-meter telescope on Maunakea, Hawaii.

W. M. Keck Observatory and ALPAO are working together to develop an innovative, high-performance deformable mirror to upgrade the existing adaptive optics system on the Keck II 10-meter telescope. This project, called HAKA (High order All-sky Keck Adaptive optics), includes the design, production, test, and delivery of a large, high-density, high-frequency deformable mirror based on the fully proven electromagnetic technology patented by ALPAO. Through this partnership, W. M. Keck Observatory and ALPAO will leverage the extensive knowledge and expertise in adaptive optics technology from both teams to advance the techniques used to correct the blurring of astronomical images caused by turbulence in the Earth's atmosphere.



Maunakea Summit sunset
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"This new project will strongly support our revenue ambition and it confirms once again ALPAO's excellence into the design, production, and support of customized, large, reliable deformable mirrors into astronomy applications. Closely working with W. M. Keck Observatory scientists, Sam Ragland and Peter Wizinowich, will allow us to go faster, lower the risks of such development, and reinforce our position as a world leader in adaptive optics. We already have an unique position in our 3000+ actuators deformable mirrors production facility (in Montbonnot, France) which will be further strengthened by today's announcement," said Piero Bruno, sales & marketing director of ALPAO.

"HAKA will supercharge our current adaptive optics system," said Sam Ragland, senior adaptive optics systems scientist at Keck Observatory. *"When used in combination with the next-generation science instruments being developed for Keck, this upgrade will enable exciting science such as direct imaging of dozens of never-before-seen exoplanets, characterizing their atmospheres, and measuring their dynamical masses."*

About W.M. Keck Observatory

The W. M. Keck Observatory telescopes are among the most scientifically productive on Earth. The two 10-meter optical/infrared telescopes atop Maunakea on the Island of Hawaii feature a suite of advanced instruments including imagers, multi-object spectrographs, high-resolution spectrographs, integral-field spectrometers, and world-leading laser guide star adaptive optics systems. Keck Observatory is a private 501(c) 3 non-profit organization operated as a scientific partnership among the California Institute of Technology, the University of California, and the National Aeronautics and Space Administration. The Observatory was made possible by the generous financial support of the W. M. Keck Foundation. We wish to recognize and acknowledge the very significant cultural role and reverence that the summit of Maunakea has always had within the Native Hawaiian community. We are most fortunate to have the opportunity to conduct observations from this mountain. www.keckobservatory.org

About ALPAO

The aim of ALPAO, leader in optical wavefront control, is to revolutionize optics by removing aberrations. ALPAO has been designing and marketing a full range of adaptive optical products for research and industry since 2008. ALPAO markets deformable mirrors, wavefront sensors and software. ALPAO products are tailor-made for various applications such as astronomy, ophthalmology, microscopy, wireless optical communications and laser technologies. ALPAO has developed many products over the years, such as deformable mirrors (DM), its



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own wavefront sensor for closed loop operations, the DM97-08 dedicated to ophthalmology, a large size (DMX) and a modal (DMM) deformable mirror for industry. It also delivered the largest European deformable mirror at the end of 2018, which includes 3,228 actuators. With over 10 years of experience in adaptive optics, ALPAO deformable mirrors offer large strokes, high dynamic motion, high resolution images and very good optical quality. ALPAO is an international company with customers over 4 continents in more than 20 countries. Over 90% of its turnover comes from export.

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