

Abstract Submitted
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KAPAO I: Natural Guide Star Adaptive Optics and Software for Control, Calibration, and Data Analysis JOSEPH LONG, Pomona College, KAPAO TEAM¹ — KAPAO is a multi-institution collaboration to develop an adaptive optics (AO) instrument for the Pomona College Table Mountain 1-meter telescope. Astronomical adaptive optics allows observers to combat distortion from atmospheric turbulence when imaging distant stars. I will provide background on adaptive optics, including the limitations of ground-based observatories and how AO systems measure and correct turbulence with optical components and computer controlled elements. I will cover software for operating the instrument and measuring its performance. This includes real-time control software, IDL routines for diagnostics and telemetry analysis, and Python-based tools that I have developed to analyze science images. One tool developed for our instrument compares science images to an ideal point source computed for our telescope. By applying this tool to the camera image time-series we provide a Strehl ratio, a metric that allows users to monitor the performance of the instrument over an observing run. Looking forward to the long-term operation of KAPAO for a multi-institution population of users, I will discuss improvements to the observer interface and the creation of data reduction tools that can simplify common instrument-specific tasks.

¹KAPAO is a multi-institution collaboration to develop an adaptive optics (AO) instrument for the Pomona College Table Mountain 1-meter telescope.

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