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HIF: a new ground-based high-contrast imager for exoplanets detection research

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Detection and characterization of exoplanets is at the forefront of astronomical research, and over 6000 exoplanets have been detected and confirmed up to now. Most successful high-contrast instruments are available on highly competitive 8~10-meter class telescope (e.g., GPI@Gemini, SPHERE@VLT, IRCS@Subaru, NIRC2@Keck).

In this presentation, a new ground-based instrumentation HIF (High-contrast Imager for detecting exoplanets orbiting Faint stars) recently developed by NIAOT (Nanjing Institute of Astronomical Optics & Technology, CAS) under the supported from National Natural Science Foundation of China (NSFC) will be introduced. The HIF is optimized to be used on 4-meter class telescopes and designed to image exoplanets with a contrast better than 10^{-5} in the near-infrared wavelengths, and its limiting magnitude of 13. Laboratory testing results and preliminary observations by HIF on a domestic telescope will be presented.

In summary, the HIF is expected to open precise exoplanet imaging to middle-sized telescopes allowing them to join in the chase especially for dim objects in exoplanet studies. Additionally, high-contrast imaging technique and associated experience with exoplanet instrumentation development could be potentially employed for China's exoplanet research program in the future.

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