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The GLINT Instrument: High-contrast Imaging of Stellar Companions using Nulling Interferometry

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Directly imaging habitable-zone exoplanets and analysing their spectra can reveal atmospheric compositions and potential biosignatures, making this endeavour a central goal in exoplanet science. However, separating the faint planetary light from its host star is extremely challenging, requiring high contrasts and tight angular separations. Nulling Interferometry offers a solution by destructively interfering light from an on-axis host star, while constructively interfering light from its companion, effectively 'nulling out' the starlight. The Guided Light Interferometric Nulling Technology (GLINT) instrument, downstream of the SCE_xAO system on the 8.2-meter Subaru Telescope (Hawai'i, USA), performs nulling interferometry in the H-band. GLINT uses photonic technology with laser-inscribed waveguides to couple light within a glass chip and has previously resolved angular separations 2.5 times smaller than the telescope's diffraction limit. Here, we present an overview of the GLINT instrument, current achievements, and future endeavours.

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