Laboratory Performance of the Keck Interferometer's Nulling Beam Combiner

B.Mennesson, S.L. Crawford, E. Serabyn, S. Martin, M. Creech-Eakman, and G. Hardy

Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena CA 91109-8099

Abstract:
One of the Keck Interferometer observing modes is based on a mid-infrared nulling instrument. It is specially aimed at the characterization of exo-zodiacal light distribution around nearby main sequence stars, in support of the Terrestrial Planet Finder mission. The Keck Interferometer's nulling beamcombiner uses a Modified Mach Zender approach for symmetric beam combination and dielectric dispersive plates to produce locally achromatic nulls around 10 microns. The beamcombiner has been assembled in the laboratory, and has successfully completed the validation phase, in which deep, broadband, dual-polarization performance has been demonstrated. We report here on the laboratory results obtained so far with this breadboard.