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The Gemini NICI Planet-Finding Campaign: Constraints on Large Separation Giant Planets

We present the results from the Gemini NICI Planet-Finding Campaign, a three-year direct imaging survey of over 200 young, nearby stars using the Near Infrared Coronagraphic Imager at Gemini South. The goals of the Campaign are to determine the frequency of long period giant planets, measure how this frequency depends on stellar mass, and study the spectral energy distribution of giant planets. With Campaign observations completed, we detail the statistical analysis conducted to set constraints on the populations of giant planets, and how these constraints compare to previous direct imaging and radial velocity results. We also present our analysis of constraints on planet frequency for different sub-samples from the NICI Campaign, including B and A stars, stars in young moving groups, and stars hosting debris disks. For all types of stars the results are consistent: large separation giant planets are rare.