

## L and Ms Band Spectroscopy with NIRC2 and Keck II Adaptive Optics: Feasibility Observations of NGC7027 and DH141569

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L and M bands present a challenging regime for spectroscopy with NIRC2 and Adaptive Optics (AO). The atmosphere emits more strongly in these bands to add much noise and other spectral features other than the source. Especially in the L band, heat from the telescope and optics adds signal to the observation and must be subtracted out of the data. This heat is hard to measure and thus must be modeled with a black body curve onto which the signal from the sky is superimposed. This project was to research the issues related to L and Ms band spectroscopy and to test feasibility by observing HD141569 and NGC7027. HD141596 is a five million year old A star that has been observed to have a proto-planetary dust disk surrounding it. The disk is near 5" in size and presents a challenging target due to the brightness of the parent star. NGC7027 is a planetary nebula with a high state of excitation and is now ejecting material into space. NGC7027 has been observed many times before as an object to test the capability of new instruments. Presented in this paper are discussion of data acquisition and reduction as it relates to L and M band spectroscopy with AO.



*Sunny Stewart is a student at the University of Hawaii at Hilo majoring in Astronomy. He has been living in Glenwood since he was in the first grade. Besides his interest in astronomy and science, he grows orchids. Sunny plans to go on to graduate school and become a professor.*