

**A DUAL FREQUENCY (810/492 GHz) SIS RECEIVER
SYSTEM FOR THE AUTHENTIC SUBMILLIMETER
TELESCOPE & REMOTE OBSERVATORY (AST/RO)**

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We have constructed a dual frequency receiver system for AST/RO. AST/RO is a 1.7 m, submillimeter telescope located at the geographic South Pole. Through polarization diplexing, the receiver can observe simultaneously at 492 and 810 GHz. The 492 GHz mixer utilizes a corrugated feedhorn with a transition into full height rectangular waveguide. The impedance match to the junction is achieved through an on-chip impedance transformer and by adjusting two waveguide backshorts. The 492 GHz junction was fabricated at JPL. The 810 mixer and junction were constructed by KOSMA. The signal is fed into the mixer via a Potter horn. The SIS junction is matched to the waveguide by an on-chip tuner and a single, fixed backshort. The system is now in operation at the South Pole.