

Title: WIDE ANGLE MICHELSON DOPPLER IMAGING INTERFEROMETER (WAMDII)

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Short Description: The WAMDII is a specialized type of optical Michelson interferometer working at sufficiently long path difference to measure Doppler shifts and to infer Doppler line widths of naturally occurring upper atmospheric Gaussian line emissions. The instrument is intended to measure vertical profiles of atmospheric winds and temperatures within the altitude range of 85 km to 300 km. The WAMDII consists of a Michelson interferometer followed by a camera lens and an 85 x 106 CCD photodiode array. Narrow band filters in a filter wheel are used to isolate individual line emissions and the lens forms an image of the emitting region on the CCD array.

Instrument Characteristics:

Mass: 100 kgm
Volume: 0.4 cubic meters
Power: 0.2 kW
Data rate: 324 kbs

General Comments:

Heritage is from an instrument being designed for flight on a future STS mission.

Instrument requires accurate knowledge of the angle between the look-direction and the spacecraft velocity vector to an accuracy of 0.03 degrees.

Field-of-view is rectangular of dimensions $6.0^\circ \times 7.5^\circ$.

Requires pointing accuracy of 0.5° .

Other targets include auroral forms, airglow irregularities, chemical releases, particle beam injections, and emissions stimulated by wave injections.

Source of Information: Experiment Requirements Document

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WIDE ANGLE DOPPLER IMAGING INTERFEROMETER OPTICS

