

DISPERSIVE INTERFEROMETER FOR SENSITIVE DOPPLER PLANET DETECTION

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We describe a new instrument for measuring 1 m/s scale Doppler velocities of starlight based on an interferometer in combination with a medium resolution grating. The interferometer brings a simple instrument response, compactness, low cost, high field of view and high efficiency. Inclusion of the disperser increases fringe visibility over an interferometer used alone. A heterodyning effect allows the use of a lower resolution disperser, allowing wider slits, lower cost and more portability than a disperser used alone. A prototype instrument tested on a stationary broadband laboratory lamp (bromine spectrum) shows repeatability of better than 1 m/s. Tests on sunlight show the diurnal rotation of Earth and photosphere fluctuations. First tests on starlight at the Lick 1-meter have been conducted recently and will be described. The 1 m/s capability can be used to detect lower mass planetary companions and stellar photosphere dynamics.

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