

The InfraRed Doppler (IRD) instrument for the Subaru telescope - Precise Near-infrared RV Measurements to Search for Planets Around M-dwarfs and Prospects for Extreme Precision RV

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The Infrared Doppler (IRD) instrument is a fiber-fed high-resolution near-infrared (NIR) spectrometer for the Subaru telescope covering the Y, J, H-bands simultaneously with an ultra-wideband laser frequency comb. After the start of operations in 2018, IRD began a large survey in 2019 to search for Earth-like planets around nearby M-dwarfs, within the framework of the Subaru Strategic Program (SSP) through 2024. We will present our planet discoveries and characterizations from our M-dwarf survey, the TESS follow-up program, and other interesting topics achieved so far.

We will also report on instrumental updates such as a single-mode fiber observing mode of IRD, realized by combining extreme adaptive optics SCEXAO and IRD; this enables modal noise-free RV measurements, which is particularly important for NIR EPRV. We will also discuss what is required in instrumentation and data reduction for NIR EPRV, based on our instrument development and observing experience with IRD.