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Laser Frequency Combs for spectrograph calibration from blue to near infrared

Astronomical laser frequency combs (LFCs) have become invaluable tools for precision astronomical spectroscopy. By serving as extremely stable wavelength references, they are ideal for searching Earth-like extra-solar planets using the radial-velocity method. LFCs generate a regular pattern of sharp emission lines, whose optical frequencies are referenced to an atomic clock. The relative stability of two individual LFCs on the cm/s level was demonstrated during a measurement campaign at the HARPS spectrograph in the visible spectral range (450nm-700nm). To make the LFC suitable as calibrators for the new generation NIR spectrographs we recently were able to extend the spectral coverage of the comb structure to 2.3 μ m on the infrared side of the spectrum.

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