Questions, Comments and Answers following the presentation

Frequency combs for astronomical applications

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Schmidtobreick: *How stable is the atmosphere? Could one use the overall sky spectrum to calibrate for the drift between an observing run and the next?*

The repeatability of our astro-comb is what we are focusing on by now. We have already demonstrated the 1 cm/s short-term repeatability of the calibration of the astro-comb, in which case LFC is used to calibrate both channels. Do the calibration with the atmosphere, we have tested the radial velocity of the star HD 75289, which is a non-active, main-sequence star that is similar to the Sun. The result is published in Wilken, Tobias, et al. "High-precision calibration of spectrographs." *Monthly Notices of the Royal Astronomical Society: Letters* 405.1 (2010): L16-L20. You can see in the astronomical spectrum calibration, we also get high calibration repeatability.
To use the overall sky spectrum to calibrate for the drift between an observing run and the next has not been tried by now to my knowledge, thanks for your proposal.

Roth: *You have emphasized the importance of properly illuminating the astrocomb fibres. In the light of the previous discussion concerning the importance of details of the line-spread function, can you say anything about how well do the calibration spectra LSF match one of science* fibres?

The line-spread function of HARPS is discussed in one publication: Pepe, Francesco, et al. "HARPS: a new high-resolution spectrograph for the search of extrasolar planets." *Astronomical Telescopes and Instrumentation*. International Society for Optics and Photonics, 2000. In the paper, it is said 'Variations of the spectrograph illumination have the same effect on the line-spread function of both the object and the reference spectrum. This is particularly important if the slit of the spectrograph is illuminated directly, but the fiber-fed spectrographs it has been shown that shifts of the photometric barycenter are reduced by a factor of 100 by the scrambling properties of the bare fibers. If a double scrambler is used this value increases to about 500, thereby reducing the RV variations well below the 1 m/s level.'