

# CARMENES science preparation: High-resolution spectroscopy of M dwarfs

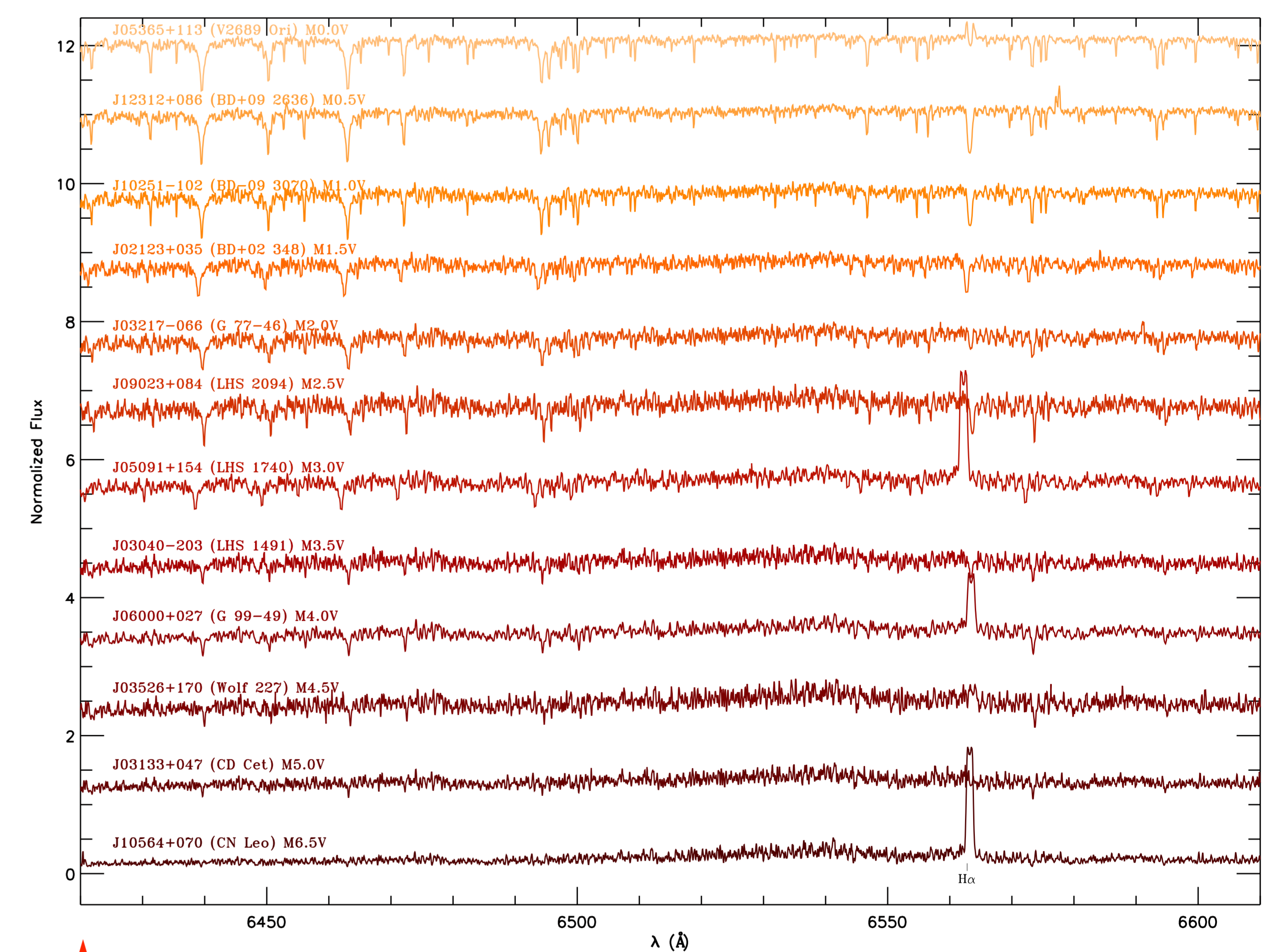
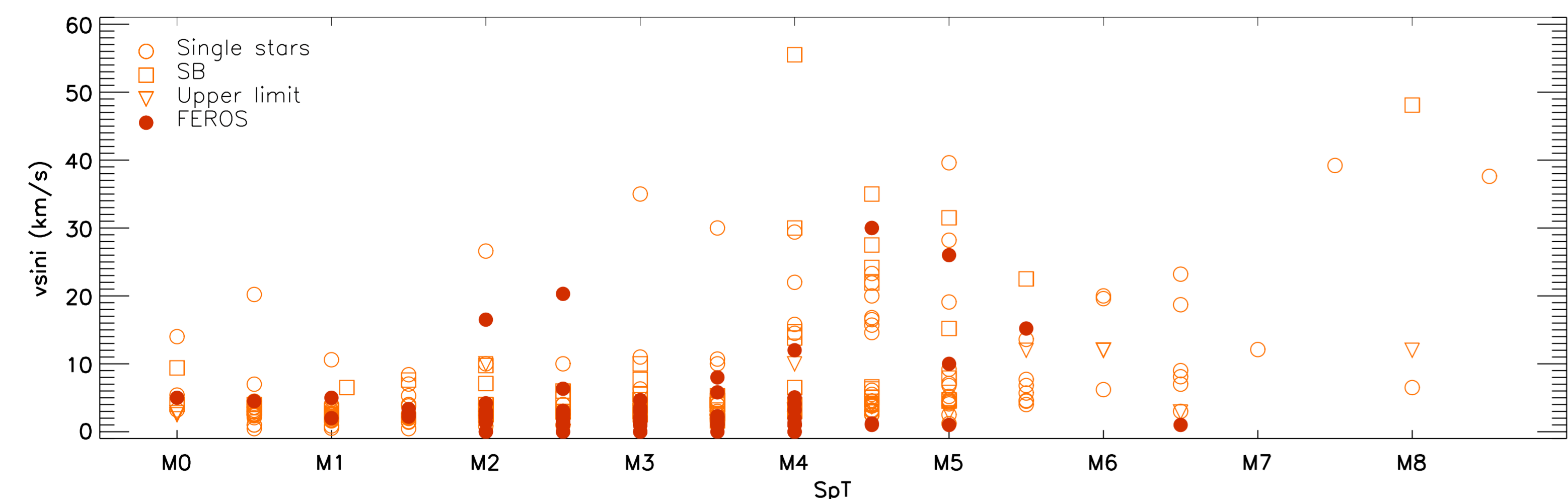
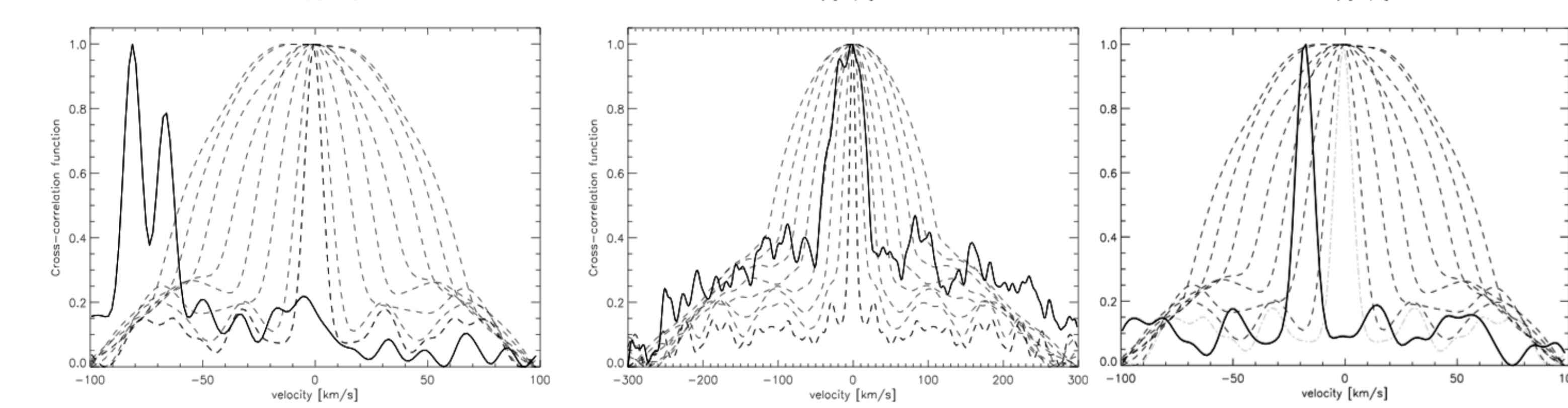
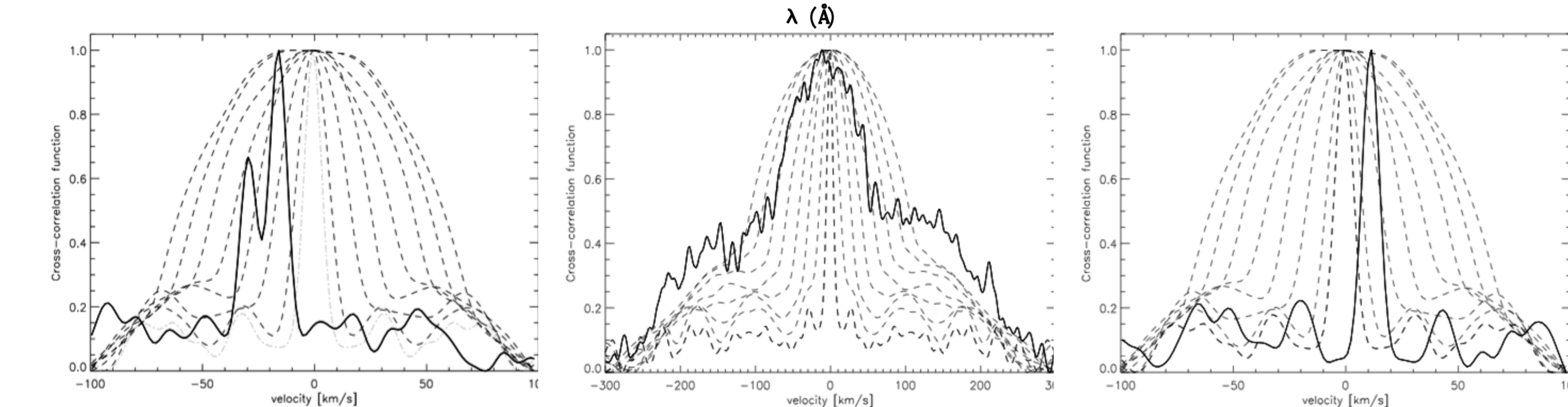
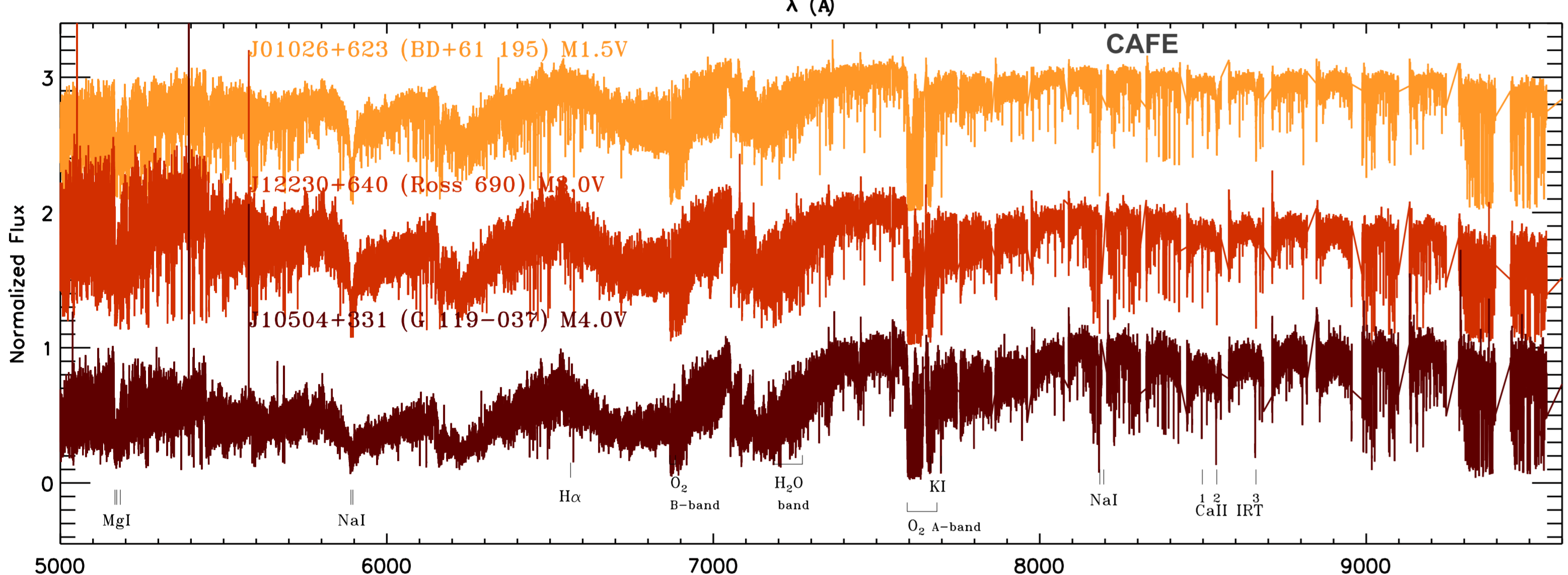
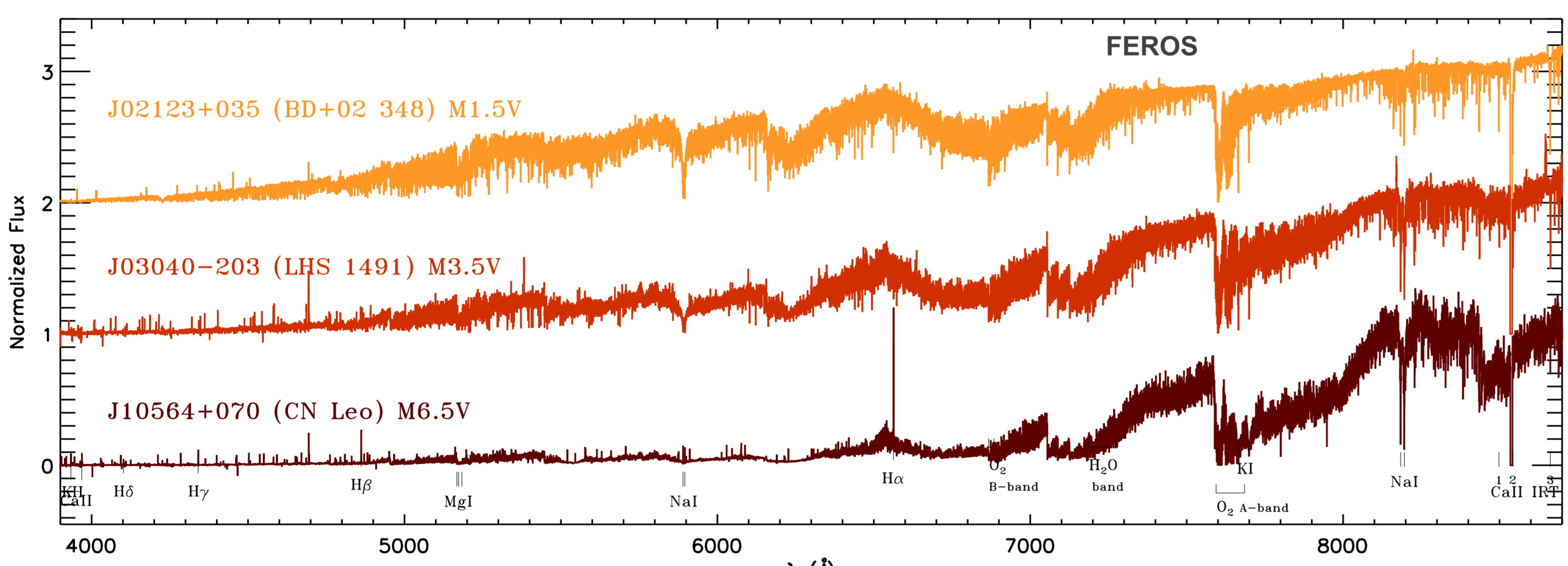
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To ensure an efficient use of CARMENES observing time, and the highest chances of success, it is necessary first to select the most promising targets. To achieve this, we are observing ~500 M dwarfs at high-resolution ( $R = 30,000-48,000$ ), from which we determine the projected rotational velocity  $v \sin i$  with an accuracy better than 0.5-0.2 km/s and radial-velocity stability better than 0.2-0.1 km/s. Our aim is to have at least two spectra at different epochs of the final 300 CARMENES targets. Our observations with FEROS at ESO/MPG 2.2 m La Silla, CAFE at 2.2 m Calar Alto and HRS at Hobby Eberly Telescope allow us to identify single- and double-line spectroscopic binaries and, especially, fast rotators, which should be discarded from the target list for exoplanet searches. Here we present preliminary results.

We present here preliminary results of the high resolution spectra taken with **FEROS** at ESO/MPG 2.2 m La Silla, **CAFE** at 2.2 m Calar Alto and **HRS** at Hobby Eberly Telescope.

► **Full-range FEROS and CAFE spectra** of three representative M dwarfs in CARMENCITA; note the CN Leo's H $\alpha$  emission.



► **19-nm wide segments of FEROS spectra** around the H $\alpha$  region of 12 stars covering the whole M0.0-6.5V spectral-type interval. Note the radial-velocity shift and the chromospheric H $\alpha$  emission.

► **Cross-correlation functions** of two single, low- $v \sin i$  stars (G 5-32, Wolf 227), two single, high- $v \sin i$  stars ([R78b] 233, LTT 11392) and two *new* spectroscopic binaries (G 272-145 AB, [R78b] 140 AB); dashed lines: artificially broadened template spectrum CCFs; spectral regions with telluric contamination were previously masked.

► **Rotational velocity vs. spectral type** from the literature (open symbols) and from our data (filled symbols); most of our targets are slow rotators.

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