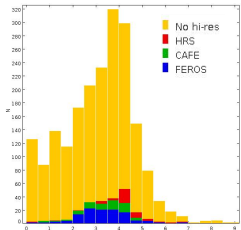
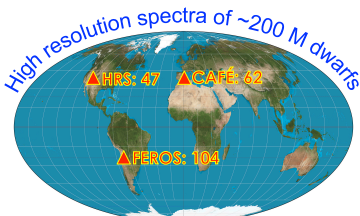
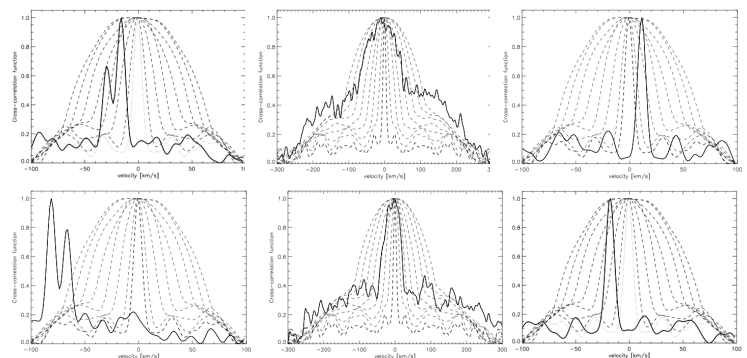
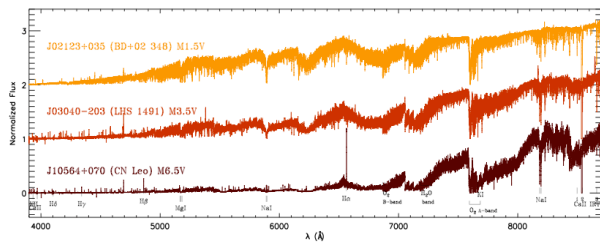


RIA-AstroMadrid 4. High-resolution spectroscopy of M dwarfs with FEROS, CAFE and HRS

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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 2.2m La Silla, CAFE at 2.2m 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.



Counterclockwise, from top right. **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. **Full-range FEROS spectra** of three representative stars of spectral types M1.5V, M3.5V and M6.5Ve; note the CN Leo's H α emission. **World map** with the number of observed stars per instrument (there is a tiny overlapping between the FEROS, CAFE and HRS samples) and **distribution of stars** with high-resolution spectroscopy as a function of spectral type and instrument. **Segments of FEROS spectra** of 12 stars covering the whole M0.0-6.5V spectral-type interval around the H α region; note the small shifts in radial velocity. **Rotational velocity vs. spectral type** from the literature (open symbols) and from our data (filled symbols); most of our targets are slow rotators.

