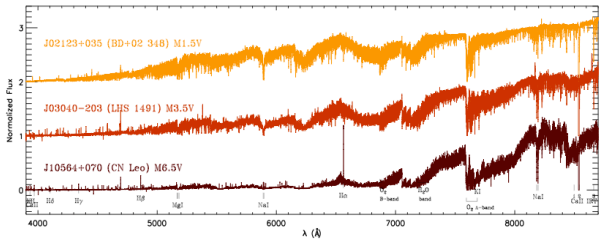
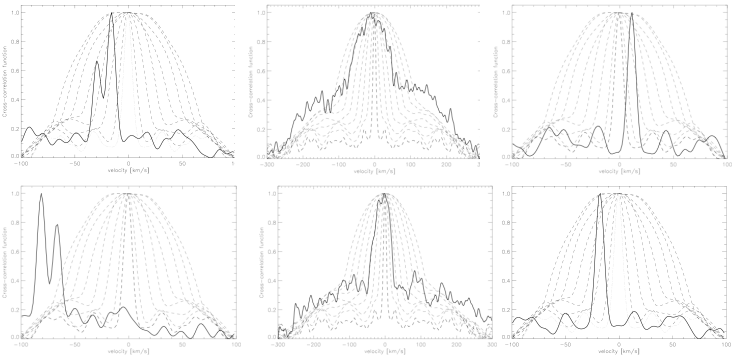
PPVI 4. High-resolution spectroscopy of M dwarfs with FEROS, CAFE and HRS

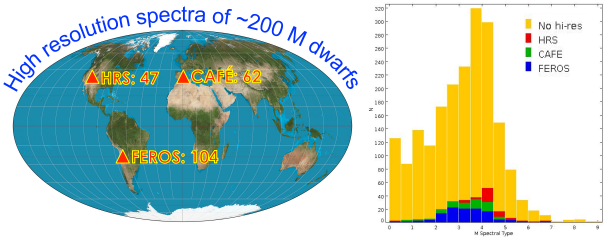
F. J. Alonso-Floriano[8], D. Montes[8], S. Jeffers[5], J. A. Caballero[10], M. Zechmeister[5], R. Mundt[1], A. Reiners[5], P. J. Amado[2], E. Casal[2], M. Cortés-Contreras[8], Z. Modroño[2], I. Ribas[4], C. Rodríguez-López[2], A. Quirrenbach[3] and the CARMENES Consortium[1,2,3,4,5,6,7,8,9,10,11]

[1]Max-Planck-Institut für Astronomie • [2]Instituto de Astrofísica de Andalucía • [3]Landessternwarte Königstuhl • [4]Institut de Ciències de l'Espai • [5]Institut für Astrophysik Göttingen • [6]Instituto de Astrofísica de Canarias • [7]Thüringer Landessternwarte Tautenburg • [8]**Universidad Complutense de Madrid** • [9]Hamburger Sternwarte • [10]Centro de Astrobiología • [11]Centro Astronómico Hispano-Alemán – Calar Alto Observatory

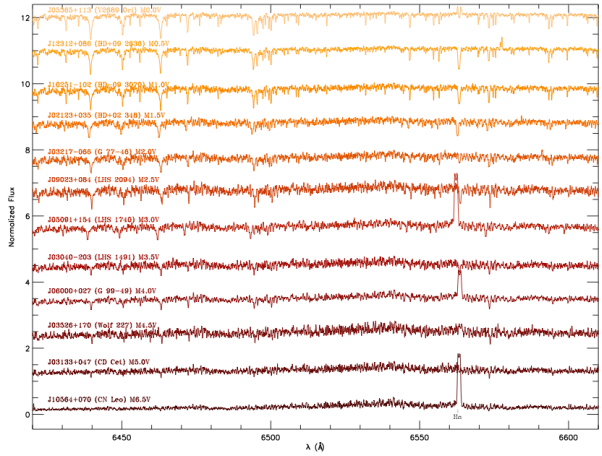
To ensure an efficient use of CARMENES observing time, and the highest chances of success, it is necessary first to select the most promising targets. To achieve this, we are observing ~500 M dwarfs at high-resolution (R = 30,000-48,000), from which we determine the projected rotational velocity *vsini* 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.

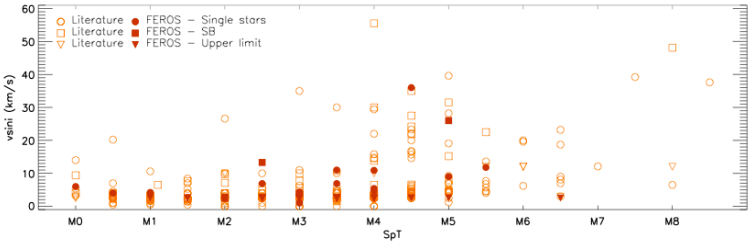






Counterclockwise, from top right. **Cross-correlation functions** of two single, low-*vsini* stars (G 5-32, Wolf 227), two single, high-*vsini* stars ([R78b] 233, LTT 11392) and two *new* spectroscopic binaries (G 272-145 AB, [R78b] 140 AB); dashed lines: artificially broadened template spectrum CCFs; 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 Hα emission. **World map** with the number of observed stars per instrument (there is a tiny overlapping between the FEROS, CAFÉ 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 Hα 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.





http://carmenes.caha.es/

Poster 2K021 @ PPVI