



# Preparation of the **CARMENES** Input Catalogue

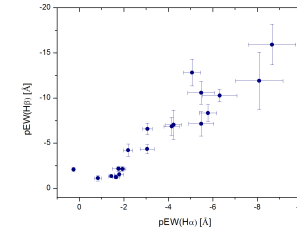
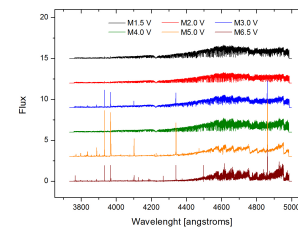
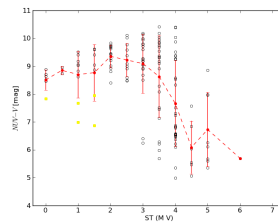
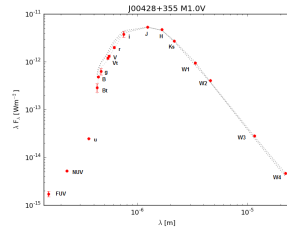
## Mining public archives for stellar parameters and spectra of M dwarfs with master thesis students



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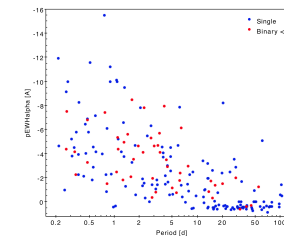
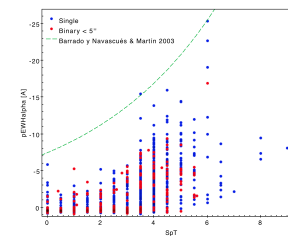
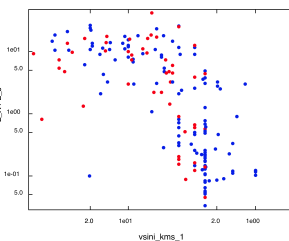
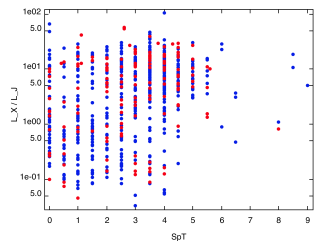
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We are compiling the most comprehensive database of M dwarfs ever built, CARMENCITA, the **CARMENES Cool dwarf Information and daTa Archive**, which will be the CARMENES 'input catalogue'. In addition to the science preparation with low- and high-resolution spectrographs and lucky imagers (see the other posters at Cool Stars 18), we compile a huge pile of public data on over 2100 M dwarfs, and analyze them, mostly using virtual-observatory tools. Here we describe four specific actions carried out by *master students*. They mine public archives for additional high-resolution spectroscopy (UVES, FEROS and HARPS), multi-band photometry (*FUV-NUV-u-B-g-V-r-R-i-J-H-Ks-W1-W2-W3-W4*), X-ray data (*ROSAT, XMM-Newton and Chandra*), and periods, rotational velocities and H $\alpha$  pseudo-equivalent widths. As described, there are many interdependences between all these data.



▲ **Photometry.** *Holgado* compiled photometric data from *GALEX*, *SDSS*, *Tycho-2*, *UCAC4*, *CMC14*, *2MASS* and *WISE* archives for constructing cleaned spectral energy distributions of 158 CARMENCITA stars (*left panel*: SED of FF And) and studying colour-colour relations of 361 bright, late-type, single M dwarfs that surpasses previous works. He also quantified the ultraviolet-excess emission and identified active early M dwarfs (*right panel*: *NUV-V* vs. spectral type).

▲ **High-resolution spectroscopy.** *Martínez-Rodríguez* downloaded 128 UVES spectra of 61 CARMENCITA stars in eight channels (*left panel*: BLU437) and measured pseudo-equivalent widths of H $\alpha$ - $\eta$ , Ca II H&K, Na I D1&2 and He I D3. He measured *pEW(H $\alpha$ )* of 27 M dwarfs for the first time and studied its relation to other lines in emission (*right panel*: *pEW(Hb)* vs. *pEW(Ha)*). He also measured *vsini* of 24 stars (7 new) and identified wrong values published in the literature.



▲ **X-ray emission.** *González-Álvarez* added new X-ray count-rate and hardness-ratio data of 188 M dwarfs to CARMENCITA. She calculated X-ray fluxes and luminosity ratios  $L_x/L_j$  for 770 stars in total and investigated its variation with spectral type (*left panel*) and rotational velocity (*right panel*). She corroborated with a large sample that close binaries (red dots) are more active than single stars and that X-ray saturation starts at  $vsini \approx 5$  km/s.

▲ **Rotation and activity.** *Hidalgo* ransacked dozens of publications and compiled photometric periods for 217 CARMENCITA stars, rotational velocities for 420, *pEW(H $\alpha$ )* for 1766, and membership in young moving groups for 44. He studied the relation between spectral type, H $\alpha$  activity (*left panel*), close multiplicity, periods (*right panel*) and *vsini*, from where he identified three stars with inclination angles  $i = 79.3$  to  $81.6$  deg: DT Vir AB, BD-21 1074 A and FF And.

