

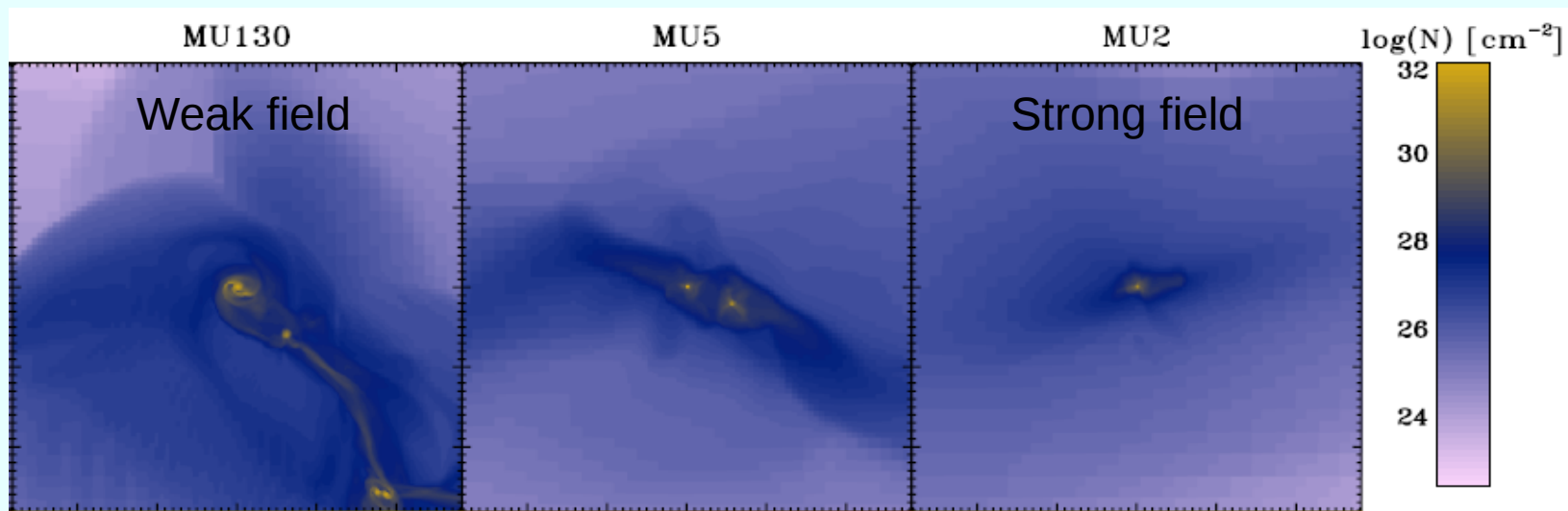
The "Binarity and Magnetic Interactions in various classes of stars" (BinaMIcS) project

C. Neiner (LESIA), J. Morin (LUPM), E. Alecian (IPAG+LESIA),
and the BinaMIcS collaboration

- BinaMIcS: international collaboration, based on two Large Programs of spectropolarimetric observations with ESPaDOnS at CFHT and Narval at TBL
- Targets: short-period spectroscopic binaries with 2 spectra (SB2) of any mass
 - detailed study of hot and cool magnetic systems
 - statistical survey of hot SB2 systems
- Goals:
 - impact of magnetic field during stellar formation
 - tidal effects on (fossil and dynamo) magnetic fields
 - magnetospheric interactions
 - magnetic impact on angular momentum and mass transfers

Hot SB2 systems

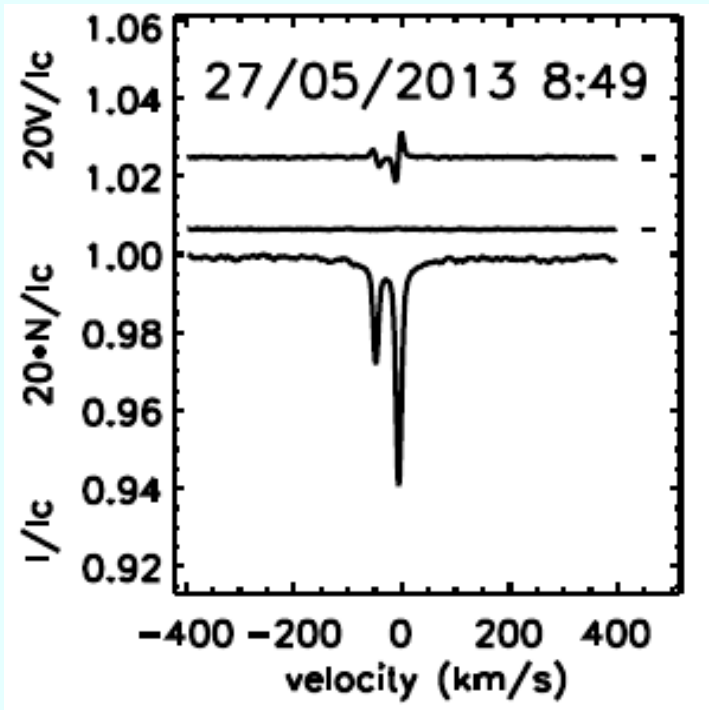
- 7 magnetic OBA SB2 systems confirmed and currently being characterised (see poster in PNPS session on HD5550 by Neiner et al.)
- No magnetic OBA SB2 system discovered among the ~ 200 systems studied in the survey, while $\sim 7\%$ of single OBA stars are magnetic: there is a strong deficit of magnetic hot stars in close binary systems
- This deficit could be related to star formation processes: simulations (e.g. Commerçon et al. 2011) showed that fragmentation of dense stellar cores is inhibited if the medium is magnetic \rightarrow it is more difficult to form magnetic binary hot stars



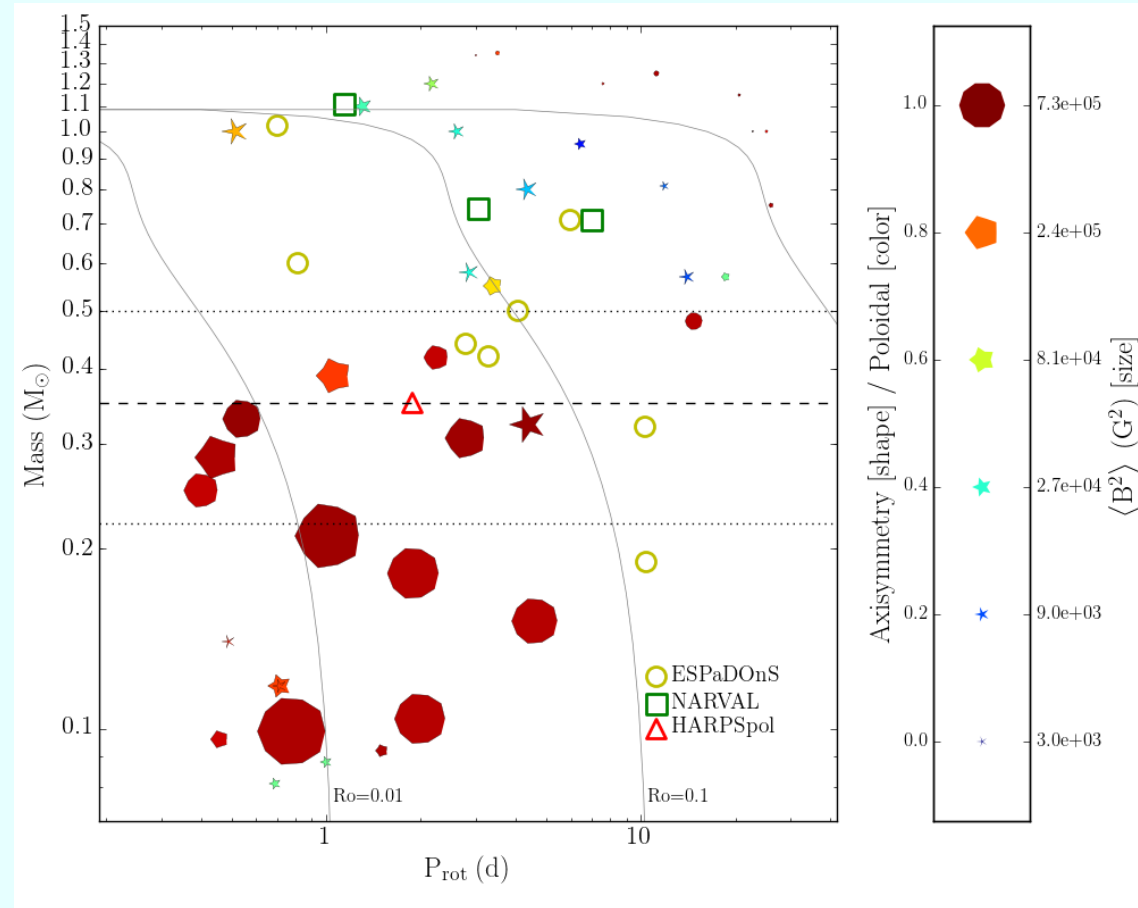
Cool SB2 systems

Observations of SB2 with:

- Cool main sequence stars
- Evolved RS CVn
- Young T Tauri stars



Example of LSD profiles for BY Dra.



Cool main sequence binaries sample (open symbols), overlaid on a mass-period diagram displaying the magnetic properties of single stars (filled symbols).

→ Magnetic maps of single stars will serve as a reference to assess the effect of binarity on stellar dynamo processes.