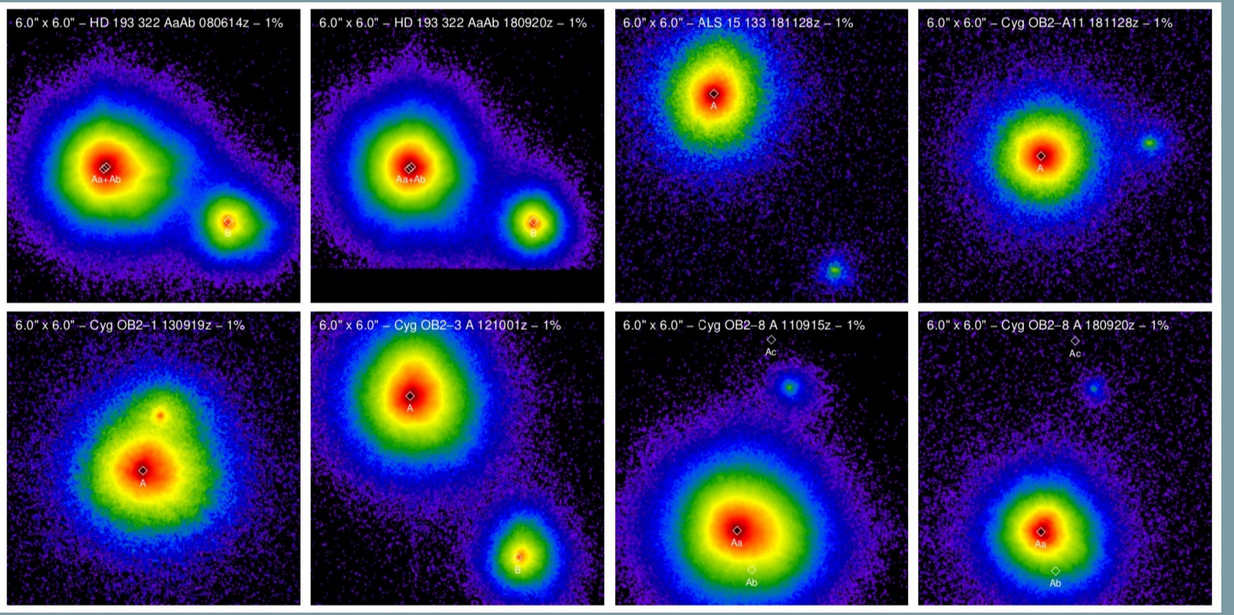
MONOS
Studying family relationships among massive stars

MONOS (Multiplicity Of Northern O-type Spectroscopic systems) is a project led by the Centro de Astrobiología and the Universidad de Alicante to study multiplicity among O-type stars (the most common among stars with masses larger than 20 M_{Sol}) in the northern hemisphere and is the sister project of a similar one for the southern hemisphere called OWN.

The project is based on a spectroscopic survey called GOSSS and a library called LiLiMaRlin and also has the support of additional data from other sources such as AstraLux lucky images, and *Gaia* and *TESS* data.

Massive stars love company and, as far as we know, all are born orbiting one or more stars. Indeed, one of the results of MONOS is that they seem to prefer complex relationships over monogamy. Most are born in triple or higher order systems, in many cases with two stars close to each other in a tight orbit and others in more distant ones. Furthermore, their relationships do not last forever as some stars die before others, partner exchanges can take place, cannibalism among family members exists, and some stars are violently expelled from the family unit.

CAB team members: Jesús Maíz Apellániz & Emilio Trigueros Páez.



Multiple O stars observed with AstraLux as part of the MONOS project. Credit: Jesús Maíz Apellániz (CAB).

Why should we care? Because massive stars are the great Galactic disrupters by injecting ionizing radiation, kinetic energy, and reprocessed elements into their surroundings. How they do this depends to a large extent on their multiplicity. For example, some of the objects studied in MONOS will evolve into gravitational wave progenitors.

The first MONOS paper: J. Maíz Apellániz, E. Trigueros Páez et al. 2019. **MONOS: Multiplicity Of Northern O-type Spectroscopic systems. I. Project description and spectral classifications and visual multiplicity of previously known objects**, was published as A&A 626, A20 (2019)