

Hunting for binaries along the evolution of massive stars

(a) VL080 - *Trigueros et al.*

MONOS: Homogeneous study of all known Galactic O-type spectroscopic binaries

(b) VL012 - *Britavskiy et al.*

Searching for signatures of binary in fast rotating O stars and BSgs

(c) VL075 - *Simón-Díaz et al.*

Hunting for binaries in the OB supergiant domain

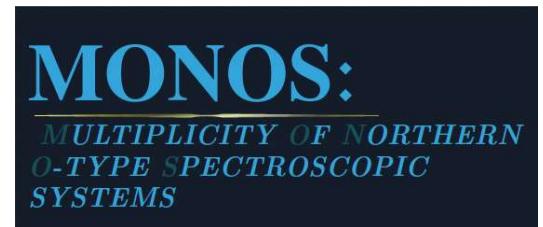
(d) VL064 - *Patrick et al.*

Binaries among the red supergiant population in NGC330@SMC

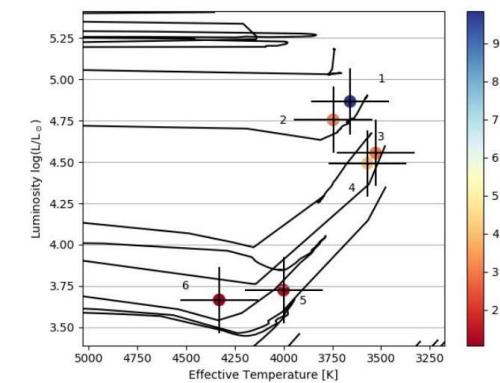
(e) VL063 - *Patrick*

Investigation of LPV in RSG

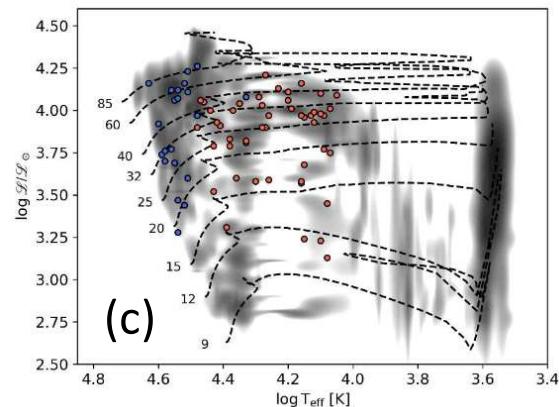
(a)



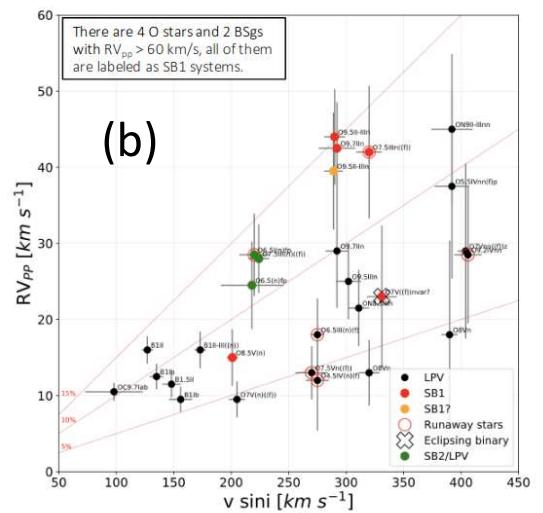
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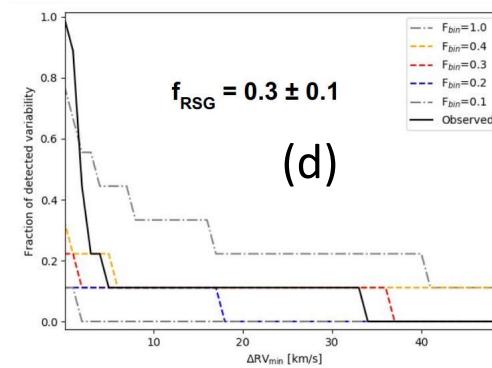
(c)



(b)



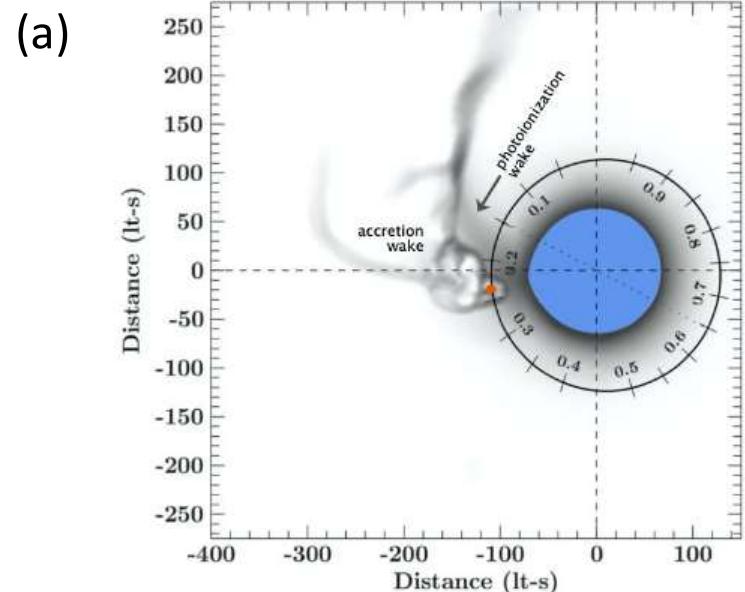
(d)



More binaries – 2 interesting cases studied in more detail

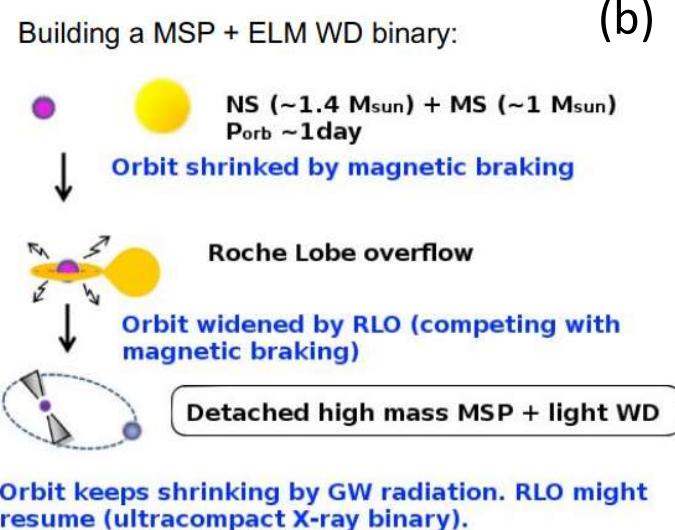
(a) VL047 - *Martínez-Núñez et al.*

Vela X-1, an eclipsing HMXB (accreting X-ray pulsar + B0.5 Ia)



(b) VL049 – *Mata Sánchez et al.*

PSR J1012+5307, a millisecond pulsar + an extremely light helium core white dwarf companion – challenge to binary evolution models



Spectroscopic libraries and photometric surveys

(a) VL029 – *García-Vargas et al.*

MEGASTAR: MEGARA@GTC Stellar Spectral Library

(b) VL076 – *Simón-Díaz et al.*

IACOB spectroscopic database of Northern Galactic OB stars

(c) VL021 – *Cortés-Contreras et al.*

CGT Osiris Broad Band data archive + discovery & identification of asteroids and cool dwarfs

(d) VL056 – *Monguió et al.:*

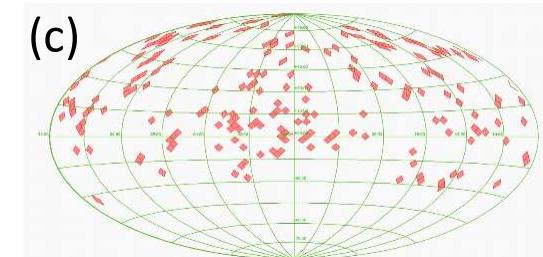
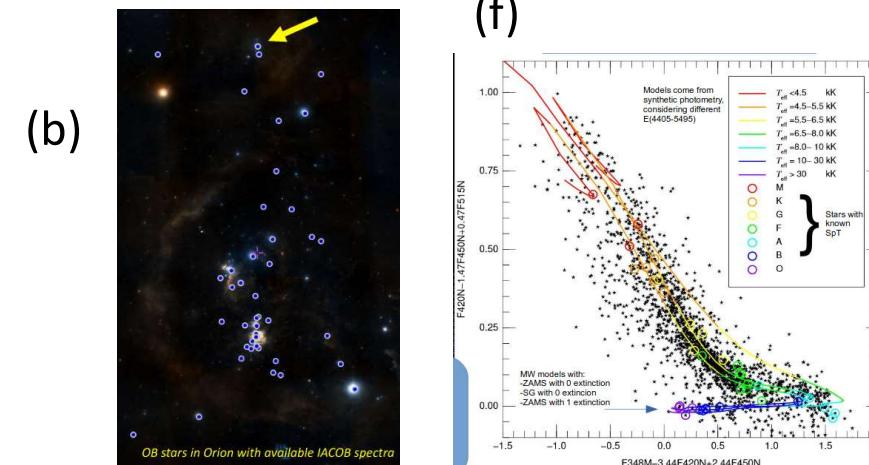
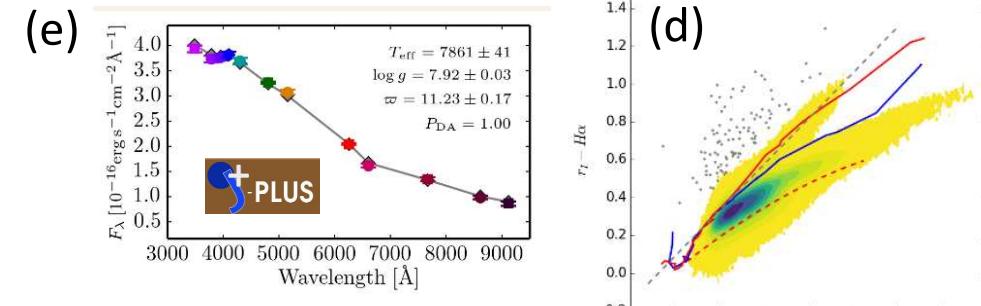
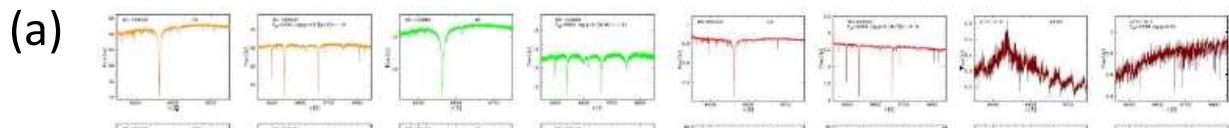
IGAPS: the merged IPHAS+UVEX optical surveys of the Northern Galactic Plane

(e) VL043 – *López-Sanjuan et al.*

White dwarfs in J-PLUS

(f) VL037 – *Holgado et al.*

GALANTE: photometric survey of O+B+WR stars in the Galactic Plane



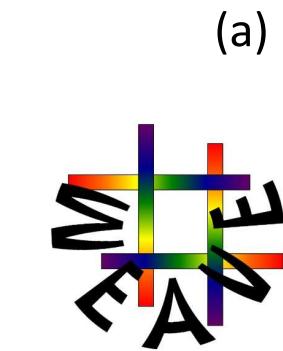
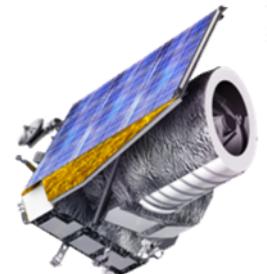
Getting ready for future surveys

(a) VL036 – *Herrero et al.*

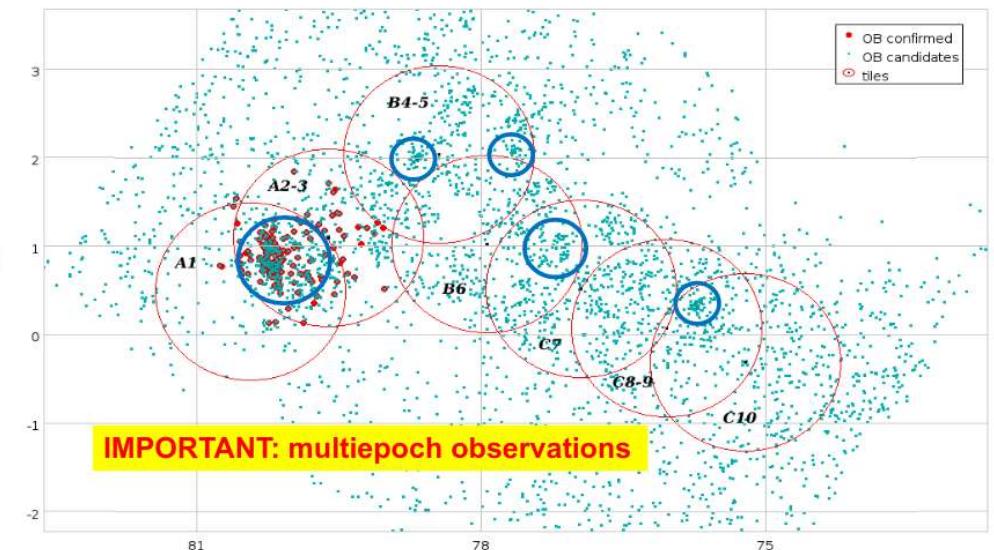
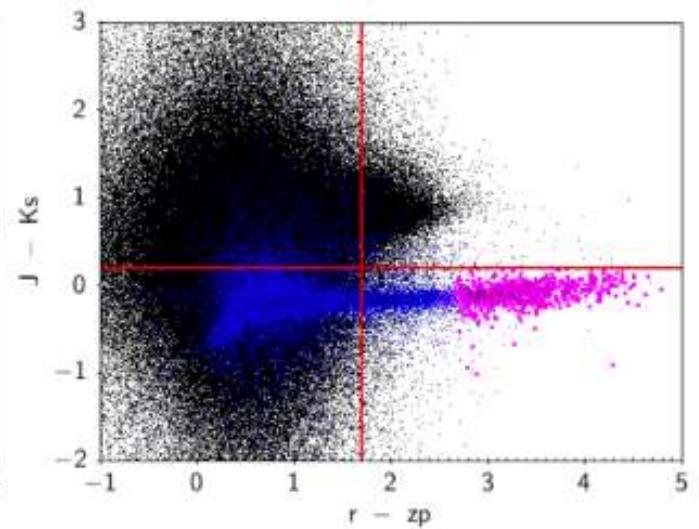
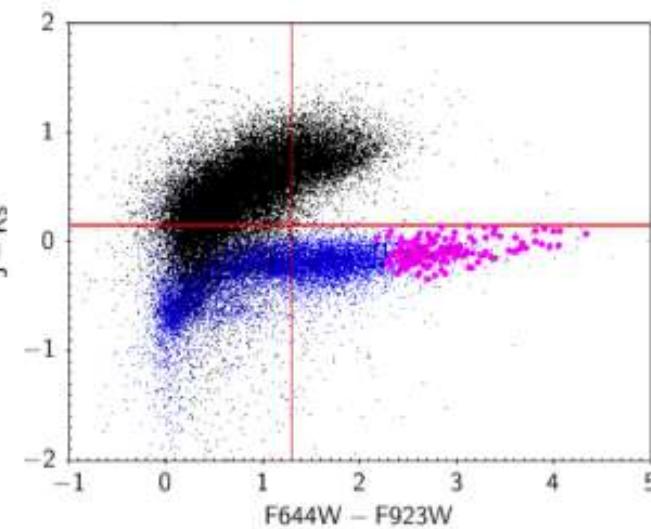
WEAVE-Cygnus HR survey

(b) VL046 – *Martín et al.*

Euclid Legacy Science on ultracool dwarfs
(881 new UCDs in ALHAMBRA & COSMOS)



(b)



Tools: QSA, SEDs, groupings

(a) VL079 – *Tabernero et al.*

StePar/SteParSyn: Atmospheric parameters in FGKM stars

(b) VL042 – *Labarga & Montes*

iSTARMOD – chromospheric activity of FGKM stars

(c) VL002 – *Alonso-Santiago & Frasca*

WEAVE: the young star pipeline

(d) VL071 – *Rodrigo Blanco & Solano*

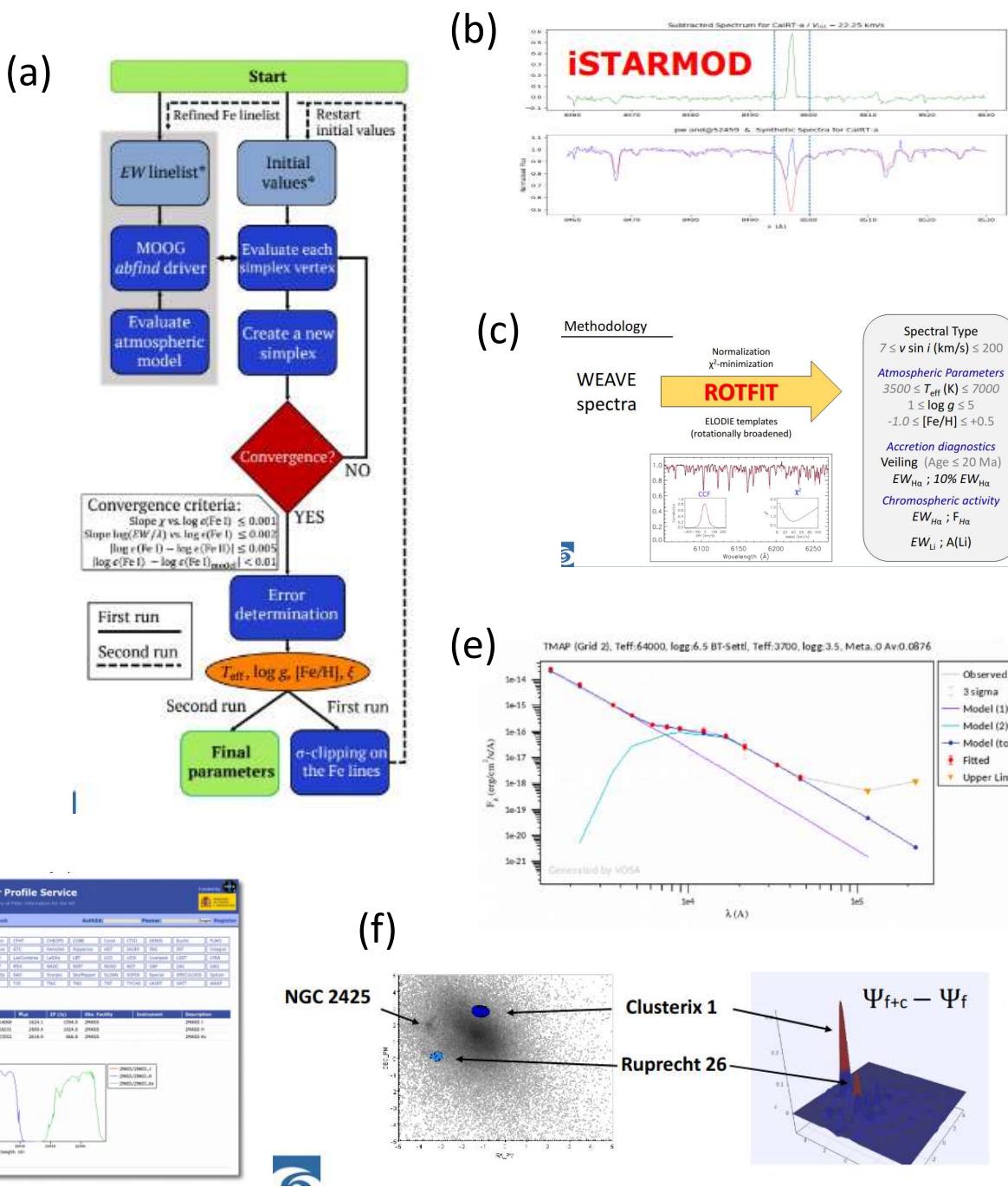
SVO Filter Profile Service

(e) VL070 – *Rodrigo Blanco et al.*

VOSA7.0 – SED analyzer

(f) VL009 – *Balanguer-Núñez et al.*

Clusterix2.0



Gaia: Where we are and where we go

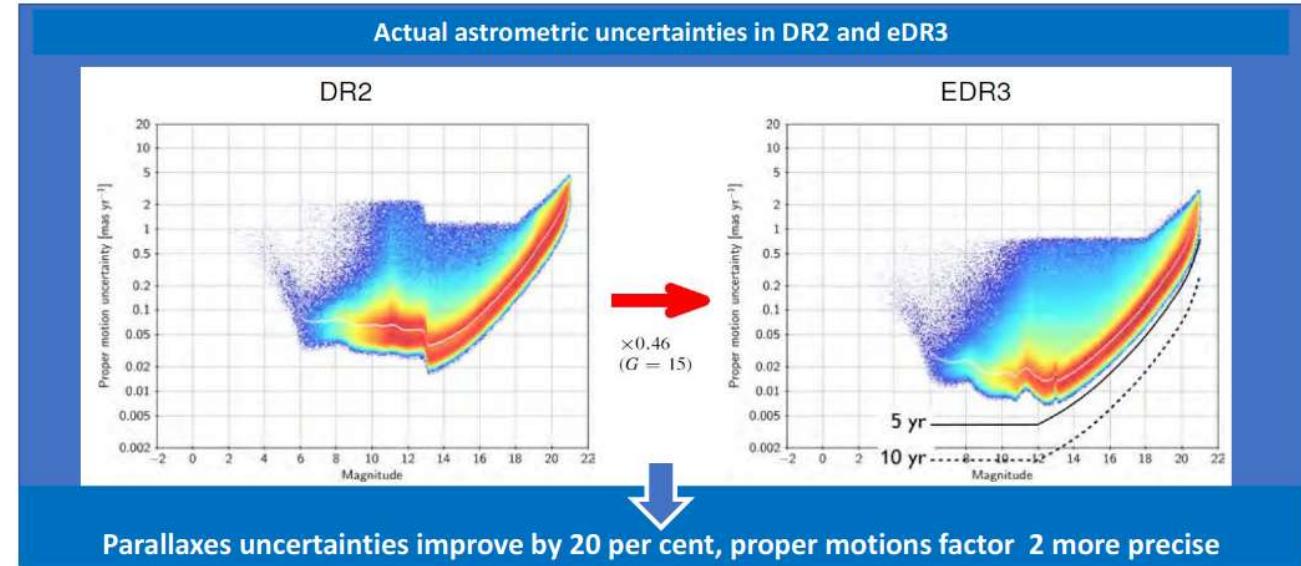


Research activities of the Spanish Network for Gaia Science Exploitation (REG)

F. Figueras¹, X. Luri¹ and C. Jordi¹ on behalf of the REG Executive Committee and Gaia-UB team.

1. Institut de Ciències del Cosmos (ICCUB), Universitat de Barcelona (IEEC-UB) Barcelona, Spain.

Gaia / REG / GREAT-COST Timeline	
18 mar 2010	Foundation of the REG
19 dec 2013	Gaia launch
25 jul 2014	Start of nominal mission
14 set 2016	Gaia data DR1 release
25 apr 2018	Gaia data DR2 release
19 jul 2019	Start of extended mission 2019-2020
19 mar 2019	MW EU COST Action: 4-year period 4/2019-3/2023
14 jan 2020	COST WG1 Milky Way School on Galaxy formation and high performance computing (Barcelona)
17 feb 2020	VI REG meeting: Expanding the Gaia legacy, the Role of Spanish Ground-based Facilities
Q4-2020	Gaia data eDR3 release
7-8 jul 2020	ESA SPC: Decision on extension 2021-2022 Expected indicative confirmation for 2023-2025
Q4-2020	COST WG5: Breaking Barriers: Inspiring the Next Generation (Santiago de Compostela)
H2-2021	Gaia data DR3 release
	Full release for nominal mission https://www.cosmos.esa.int/web/gaia/release



A few more examples of scientific exploitation of Gaia-DR2

(a) VL015 - *Carrera et al.*

Spatial distribution and dynamical evolution of M67, the nearest old open cluster

(b) VL011 - *Berlanas et al.*

CygnusOB2 (updated census OB stars + self enrichment processes, spatial substructures + recent star formation history)

(c) VL023 - *de Burgos et al.*

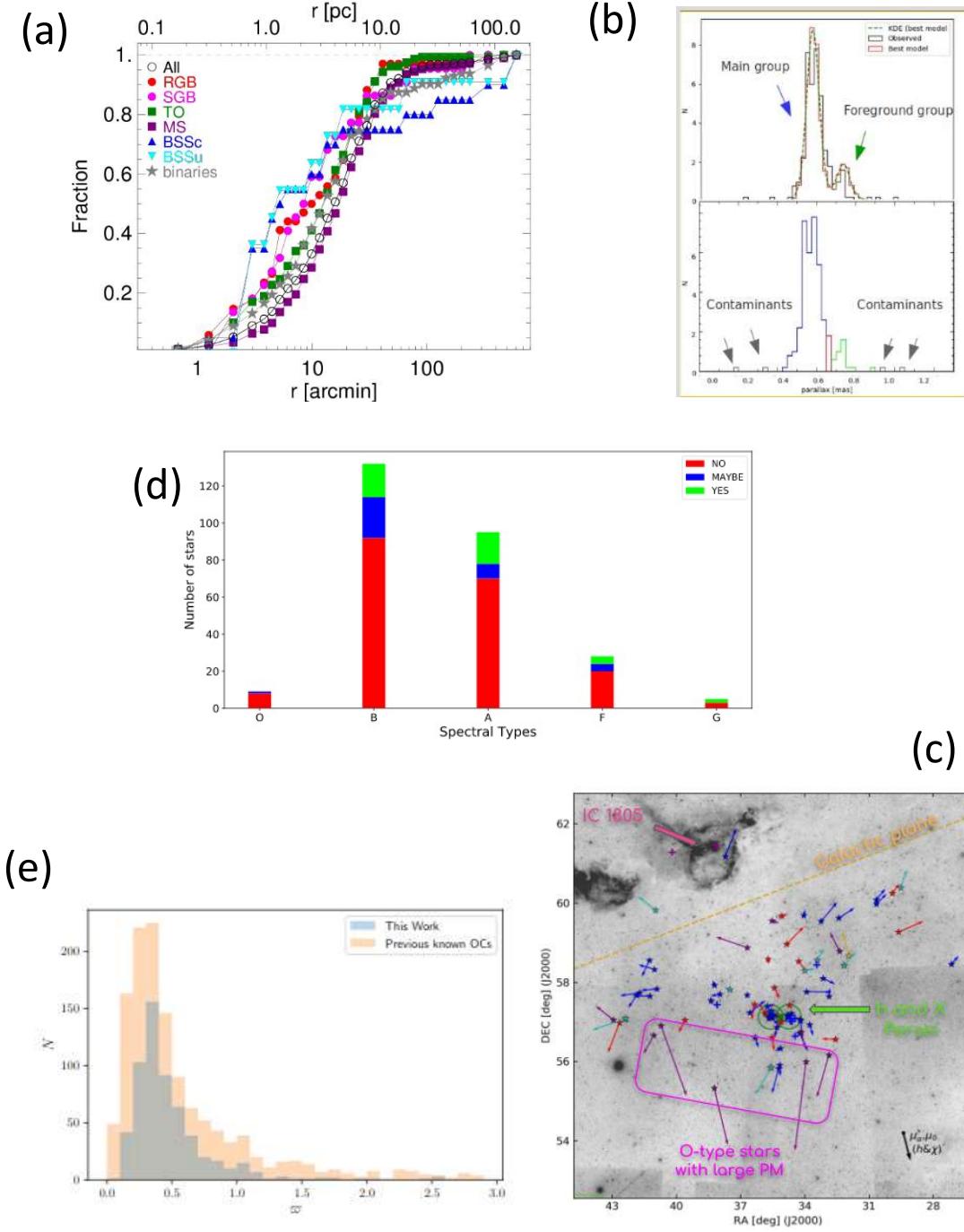
The OB supergiant population of PerOB1 (+ground based spectroscopy)

(d) VL065 – *Pérez Blanco et al.*

Clustering properties of Herbig Ae/Be stars (+CEREAL)

(e) VL016 – *Castro-Ginard et al.*

Galactic open cluster population (650 detected open clusters – some new at < 1-2 kpc)



RC3: Vía Láctea y sus componentes

Molecular clouds and star formation

(a) VL007 – *Areal et al.*

$^{13}\text{CO}/\text{C}^{18}\text{O}$ abundance ratio in W33 – Study of the interplay of FUV radiation and the molecular gas

(b) VL072 – *Rodríguez-Bara et al.*

Elemental abundances and depletions in star forming filaments – GEMS molecular database

(c) VL061 – *Palau Puigvert et al.*

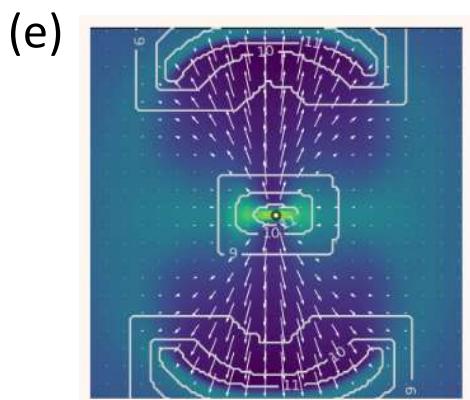
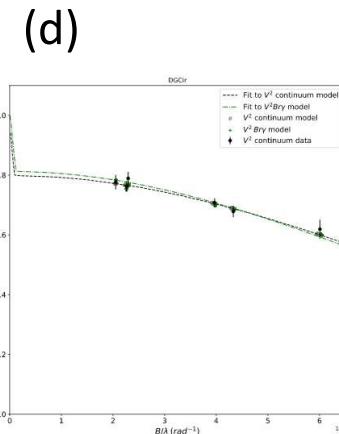
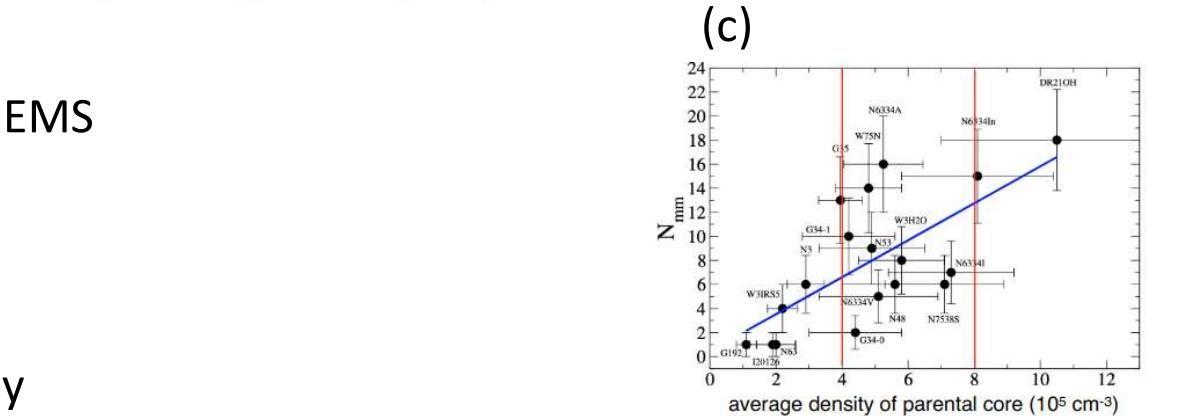
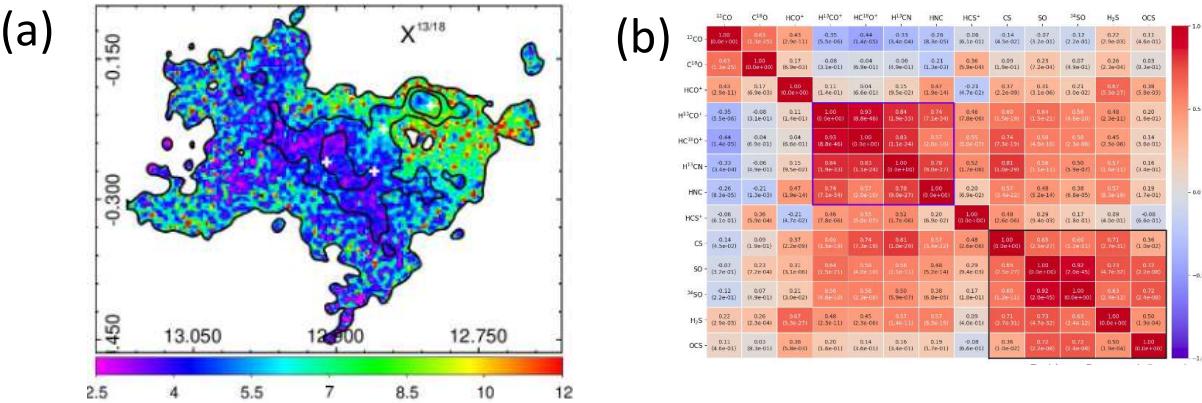
Fragmentation of molecular clouds: the role of magnetic field
(polarization data obtained as part of the Submillimiter Array Legacy Survey)

(d) VL053 – *Mignon-Risse et al.*

Modelling and investigation of the main accretion mode during massive star formation

(e) VL044 – *Marcos-Arenal et al.*

Analysis/modelling of disks around Herbig Be stars – empirical constraints to theories of formation mechanisms of planetary discs)



Some hot topics/questions to be discussed

- How is Gaia DR3 going to help us to improve our science?
- Is the Spanish community ready to benefit from the exploitation of the WEAVE survey?
- Do we think that in the next 5 years we will be able to connect our research on massive binaries with the recent discoveries about GW emitters? What is the best route to follow?
- Are we making good publicity of our superb ground based (spectroscopic/photometric) datasets? Same question for the case of our analysis tools? Or it is better to keep them for ourselves for the moment? Are we sufficiently exploiting the sVO channel?
- Are we in a good position to step forward in our knowledge of the physical properties and evolution of molecular clouds and its connection with star formation process in the various stellar mass regimes?