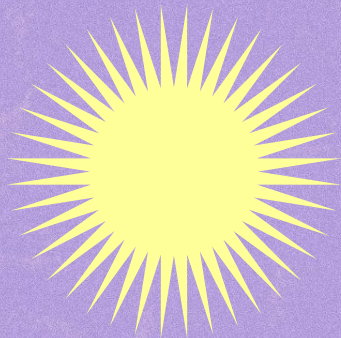




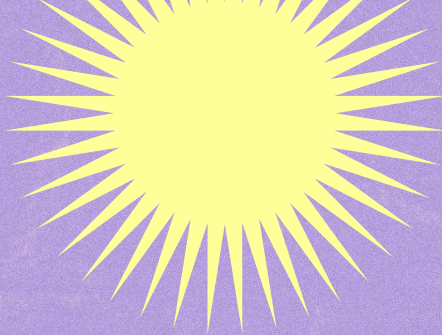
The first Galactic maps of planetary systems

Teodora Žižak

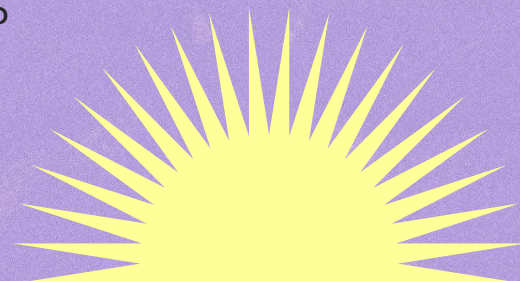
Astronomical Observatory of Belgrade
Faculty of Mathematics, University of Belgrade



МАТФ
Математички факултет
Универзитет у Београду



Exoplanets & habitability



- ★ circumstellar habitable zone (initially temperature gradient)
- ★ galactic habitable zone (initially metallicity gradient)
- ★ wider galactic environment → intra-galactic habitability
 - metallicity
 - radiation
 - dynamics
- ★ galactic positions of planetary systems?

Exoplanet Encyclopaedia

-getting to know the dataset-

Collecting data from:

- ★ Anglo-Australian Planet Search
- ★ California & Carnegie Planet Search
- ★ Geneva Extrasolar Planet Search Programmes
- ★ Transatlantic Exoplanet Survey
- ★ University of Texas - Dept. of Astronomy
- ★ HAT and HATS
- ★ WASP
- ★ NASA Exoplanet Archive
- ★ Kepler

Objects included in the database:

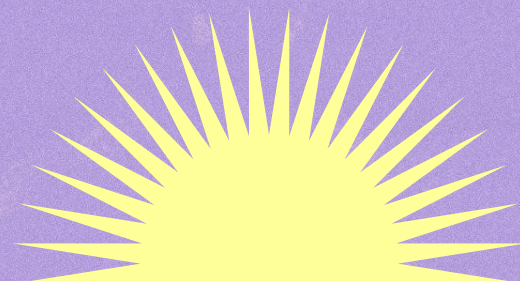
- ★ exoplanets
- ★ exocomets
- ★ possible brown dwarfs ("system without star")
- ★ interstellar objects in the Solar System

total confirmed exoplanets **8303**

total confirmed planetary systems **5638**

total multi-planet systems **1147**

**...fundamental parameters, but
no galactic coordinates!**



Quest for galactic coordinates: cross-searching Simbad

simbad.cds.unistra.fr

(1) initial sample (5638 systems)

- kick out dubious brown dwarfs (952), exocomets (9), Solar System visitors (3), and (strangely) objects without listed coordinates (2)
- search the Simbad database with identifiers from exoplanet.eu



(2) alternative identifiers

- remove component indicators
- correct typos
- try alternate names
- & many more...



(3) data availability

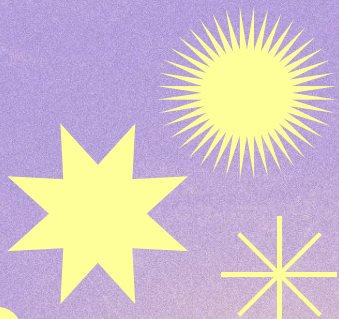
- remove stars with unknown glon, glat



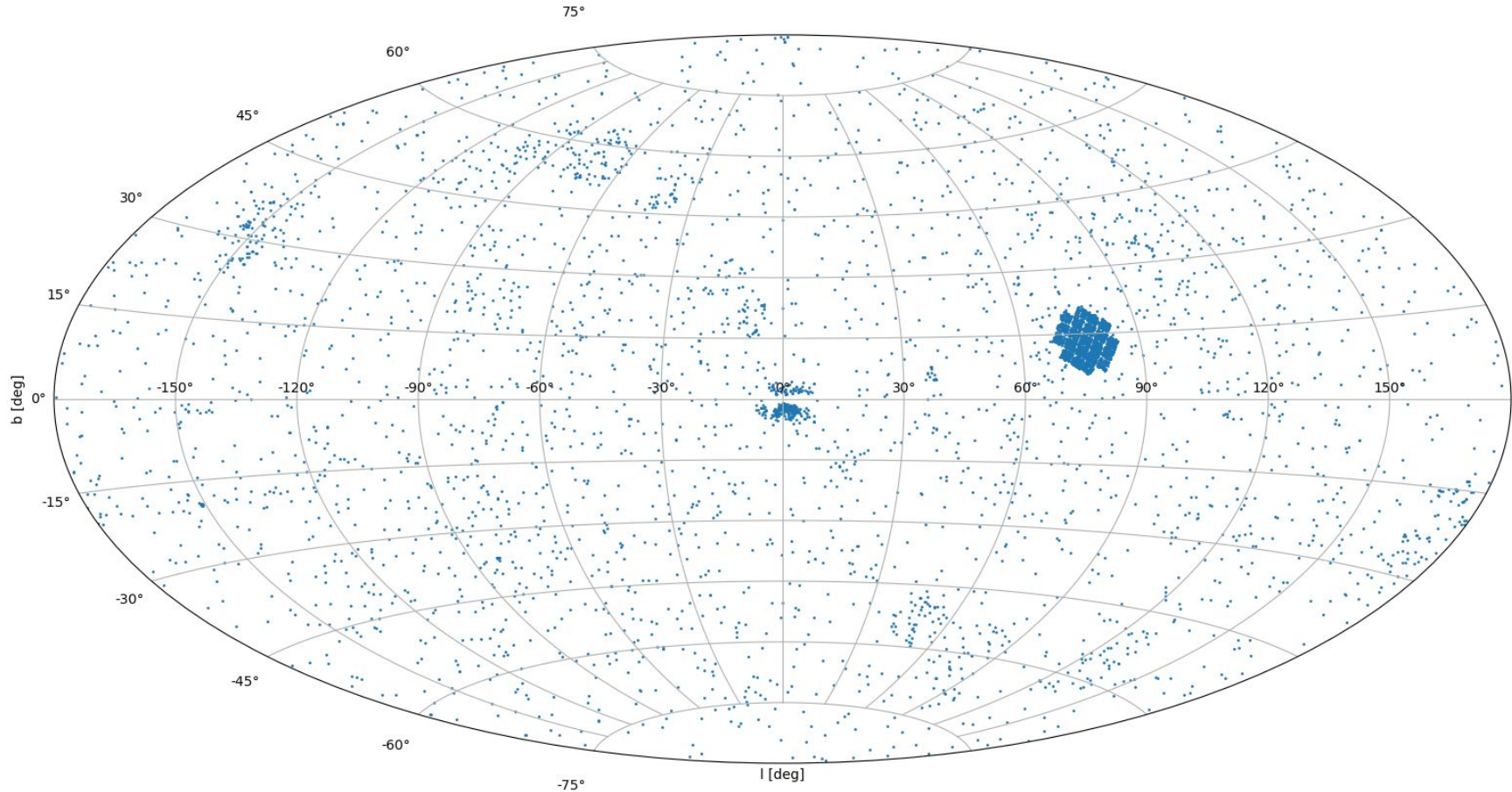
final sample:

5467

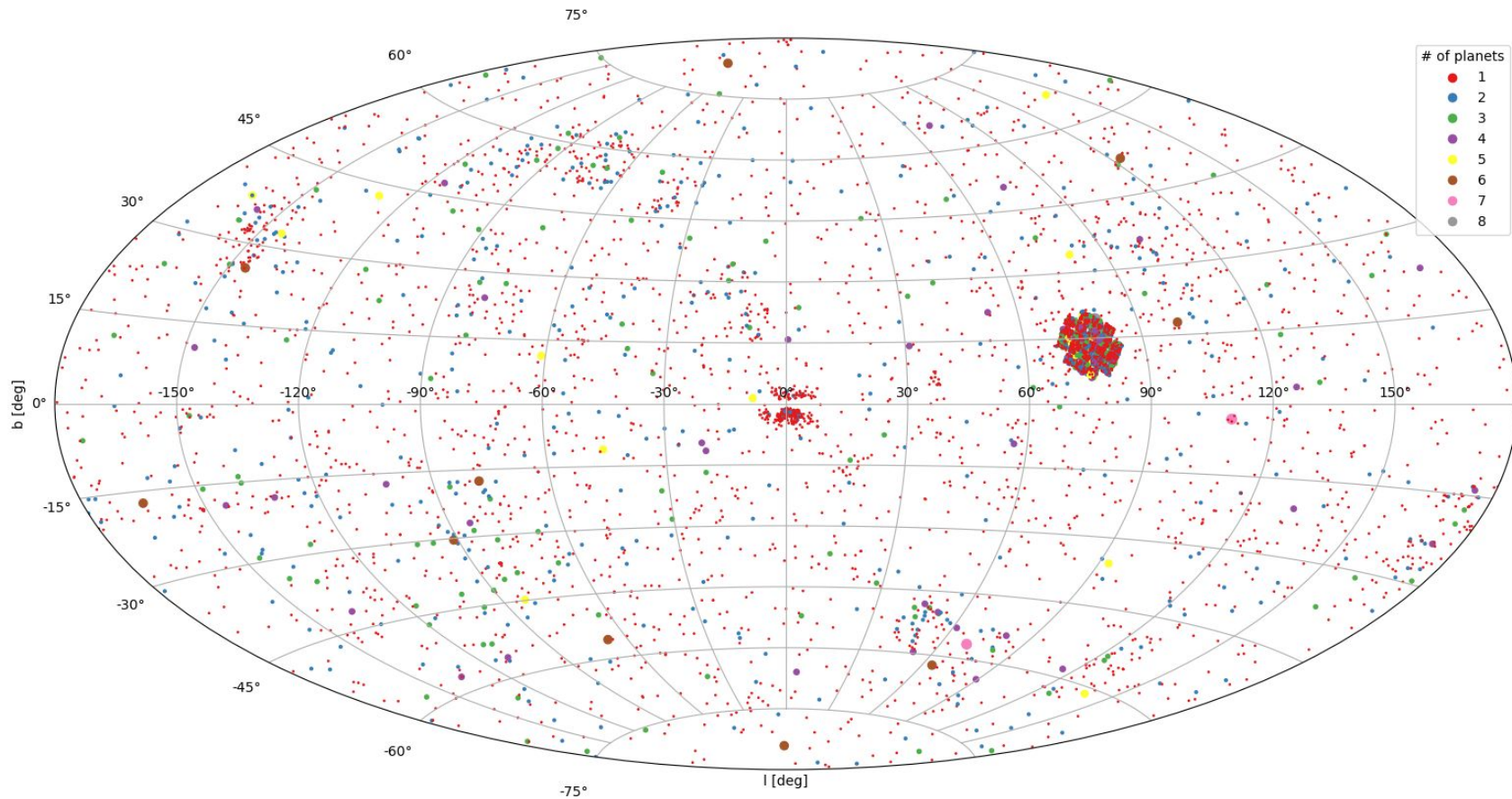
host stars



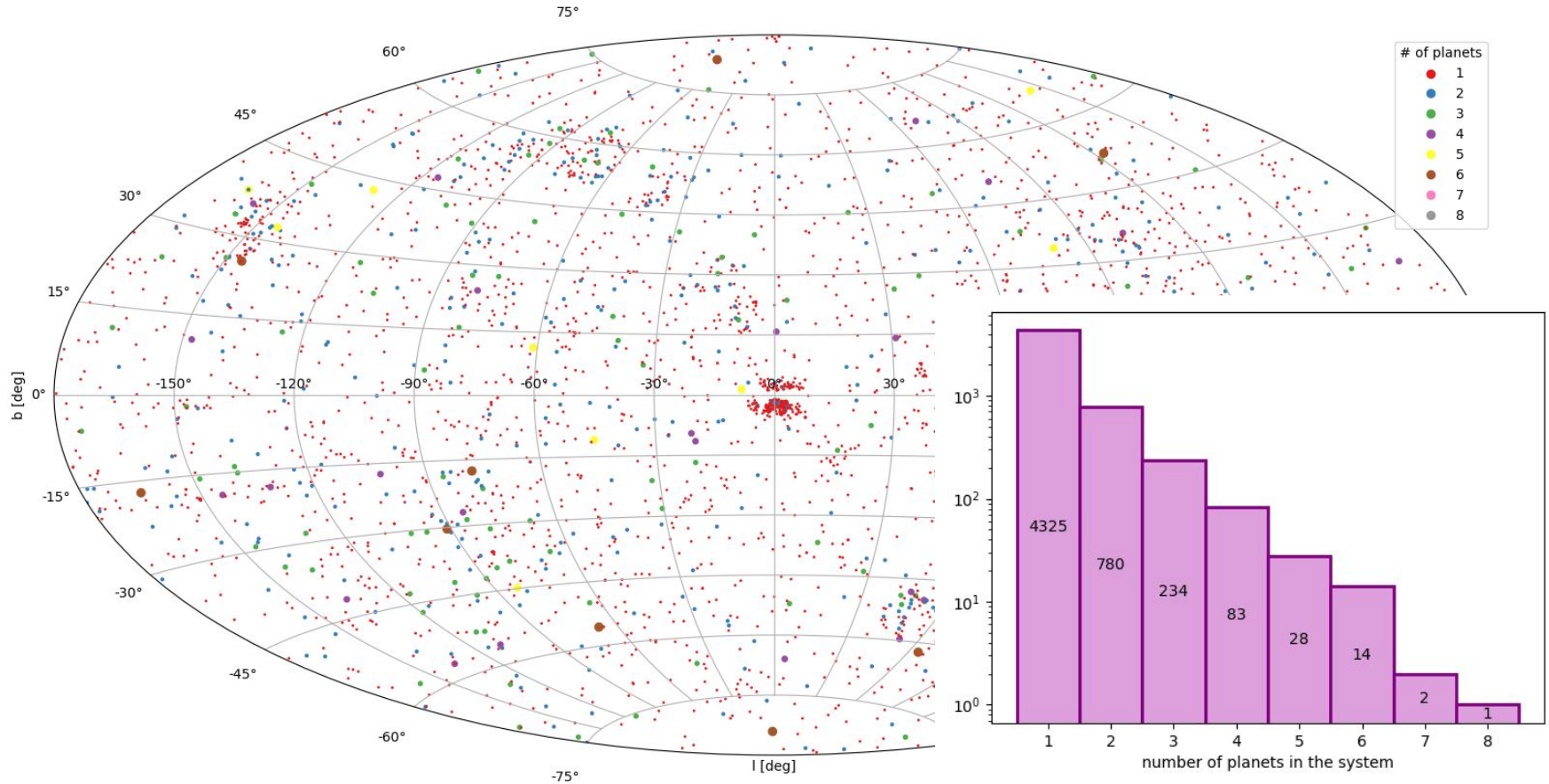
Planetary systems across the Galaxy



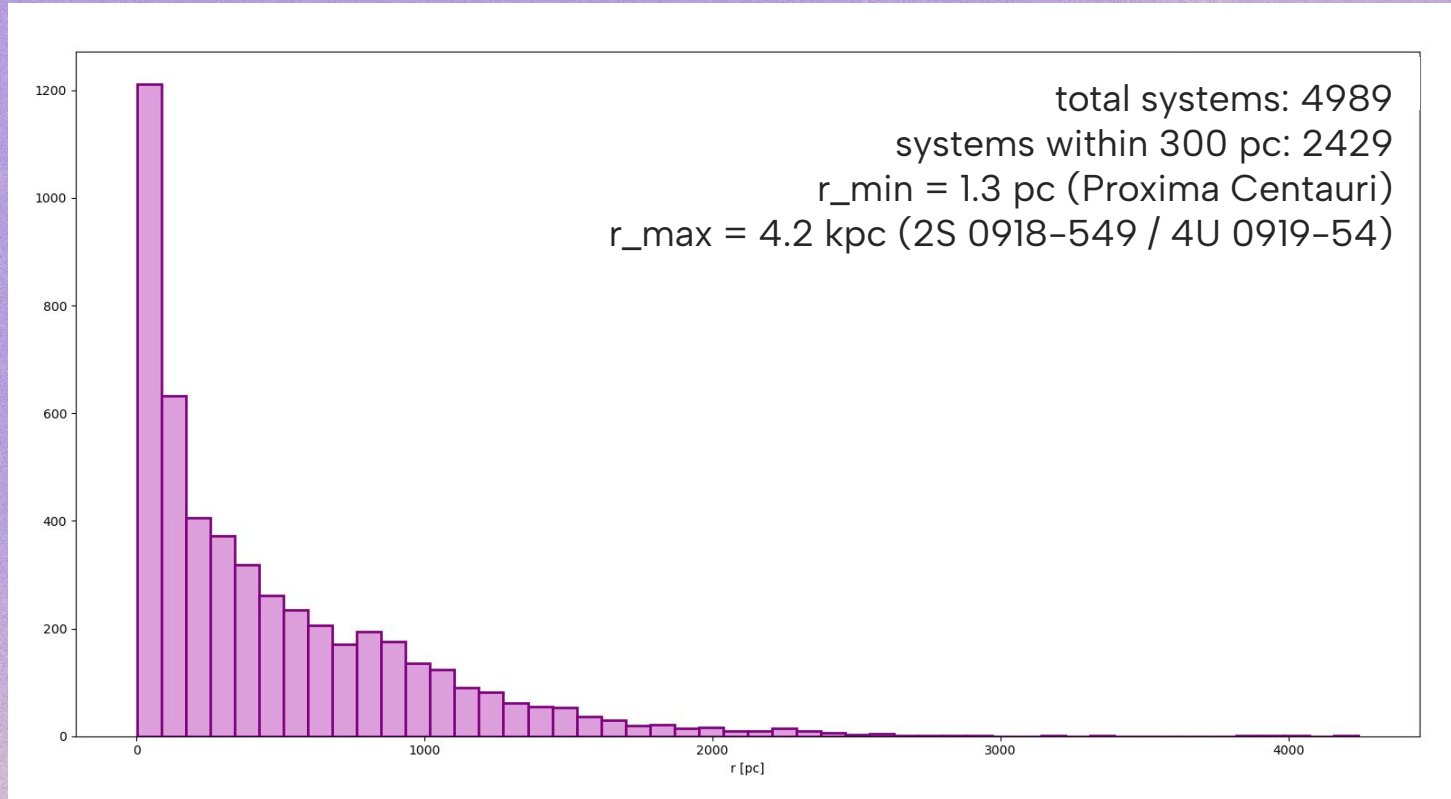
Planetary systems across the Galaxy – planet multiplicity



Planetary systems across the Galaxy – planet multiplicity



Planetary systems across the Galaxy – distance



Future (& ongoing) work

- ★ creating a public database with galactic coordinates of planetary systems
- ★ combining a 3D map with the local structure of the Milky Way
- ★ estimating the errors
- ★ forming a more coherent sample from Gaia DR4
- ★ integrating orbits of host stars in the galactic potential
- ★ obtaining precise age data for the host stars
- ★ obtaining chemical abundance information
- ★ calculating habitable parameters...
- ★ (finally,) mapping out habitability within the Milky Way

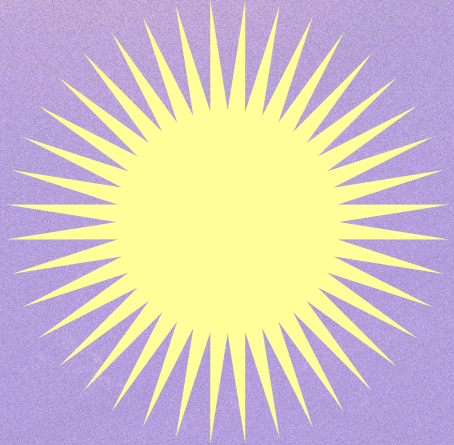




Thanks!

Do you have any questions?

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