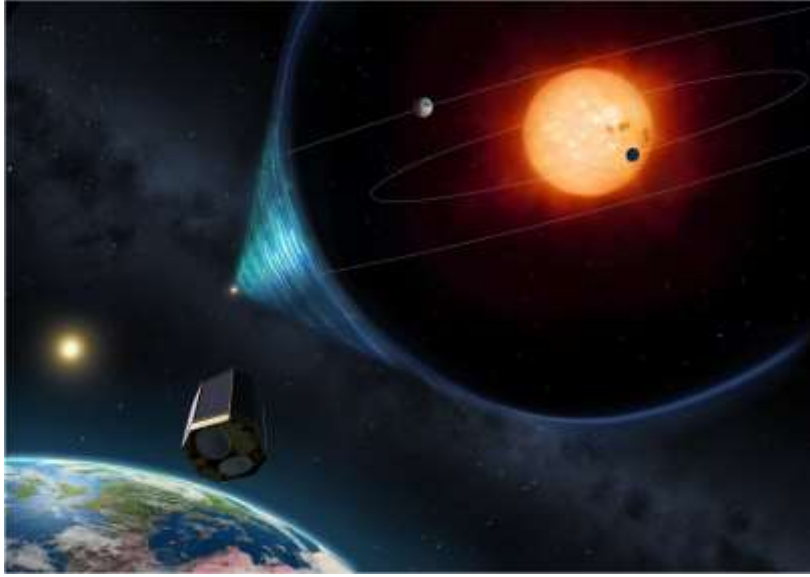

PIC Target Prioritization

A. Sozzetti

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CIC/KIC Ranking

- Limitations of spectral classification (heteregeneity of catalogues, etc.). Contamination etc.

- Limitations of the Kepler Spectral Classification Program (SCP)

TIC Ranking

- Critical for TESS's selection and prioritization of CTL
- Brightness, spectral type, radius
- Contamination levels
- Observing conditions
- Detectability of small planets

$$\frac{\sqrt{N_S}}{R^{1.5} \times \sigma}.$$

Stassun et al. 2018-2019 (AJ)

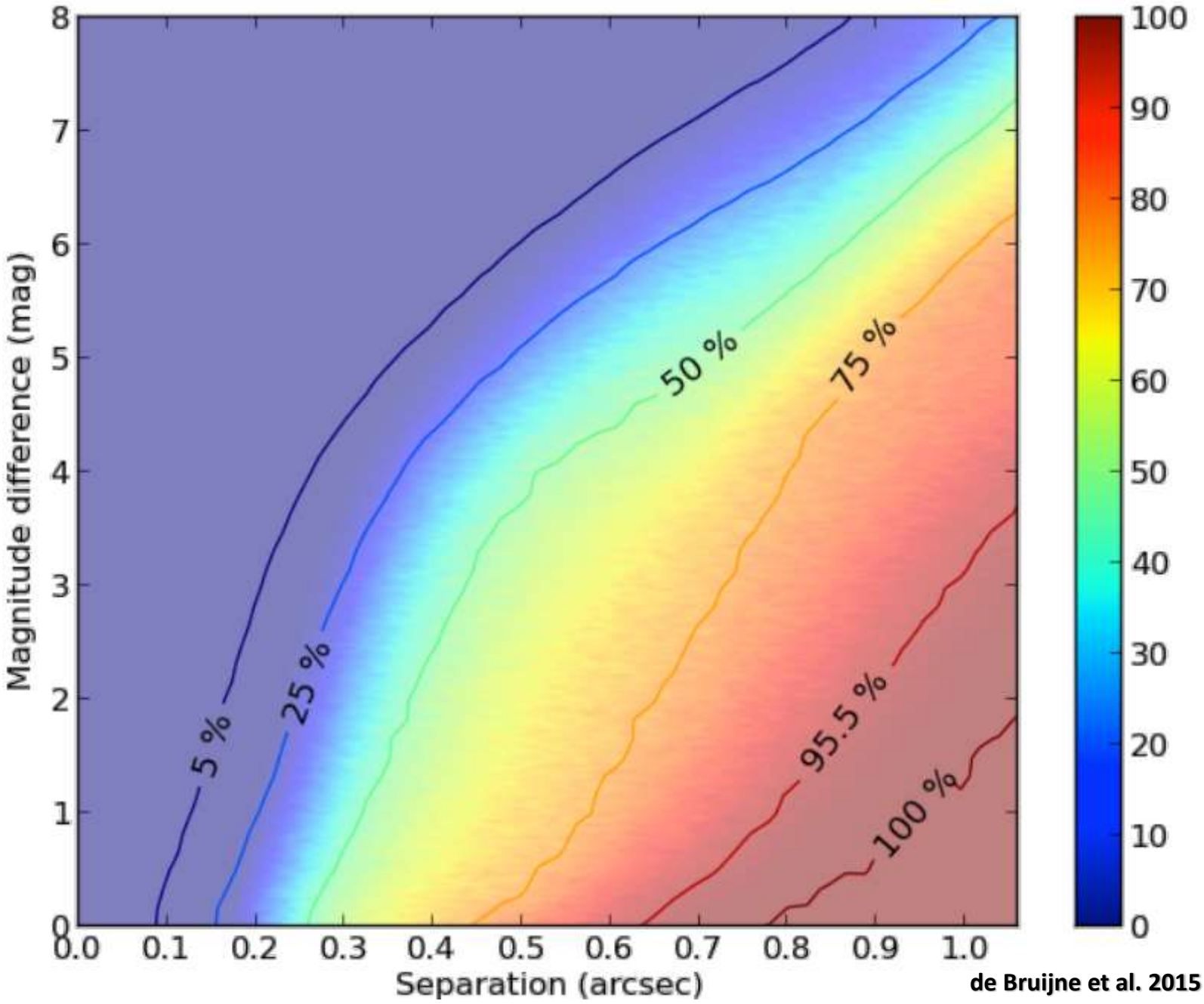
PLATO Target Samples

	Sample 1 (P1)	Sample 2 (P2)[5]	Sample 4 (P4)	Sample 5 (P5)
Stars	≥ 15 000 (goal 20 000)	≥ 1000	≥ 5000	≥ 245 000
Spectral type	Dwarf and subgiants F5-K7	Dwarf and subgiants F5-K7	M dwarfs	Dwarf and subgiants F5-K7
Limit *V*	11	8.2	16	13
Random noise (ppm in 1 hour)	34	34	800	
Observation phase	LOP	LOP	LOP	LOP
Sampling time (s)				
Initial measurement	-	-	-	≤ 600
Centroid measurements	-	-	-	≤ 50 for 5% of targets
Transit oversampling			-	≤ 50 for 10% of targets
Imagettes	25	2.5	25	25 for > 9000 targets
Wavelength	500–1000 nm	500–1000 nm 300 stars with colour information	500–1000 nm	500–1000 nm

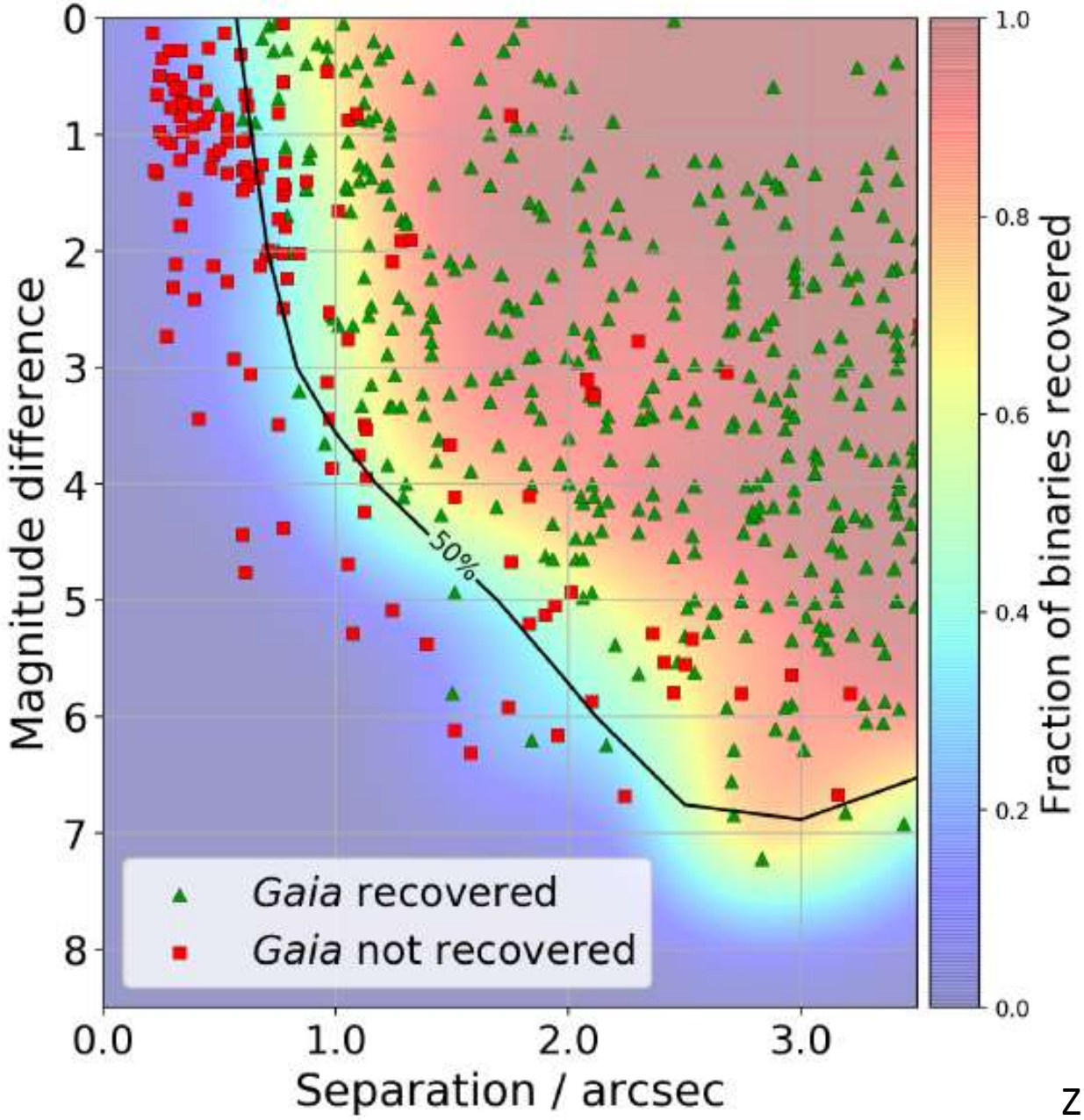
PIC Ranking

- In-flight observation constraints
- Contamination (levels, characterization)
- Brightness (reddening corrected), spectral type, age, distance, radius, mass, activity, multiplicity
- Detectability of small planets
- Follow-up & characterization potential

Translate this into nice ranking metrics/matrices!



de Bruijne et al. 2015



Gaia DR2:

- Much worse than expected in the inner 1°

- Improvements in future Gaia DRs, but…

- The inner 0.5° will always require AO follow-up

Ziegler et al. 2018

Considerations for the Metric/Matrix

- Knowledge of any existing imaging/photometric/spectroscopic follow-up
- Knowledge of existing systems (transiting and not!)
- Knowledge of stellar multiplicity (brace for Gaia (E)DR3…)
- Potential for mass determination (given the star)
- Potential for atmospheric characterization (given the star)

NECESSARY FOR THE FOUR SAMPLES, BUT ALSO THE 'PRIME' SAMPLE!