## An alternative approach to target selection to preserve sample diversity

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observable targets.

The success of Ariel relies not the characterization of single targets, but on the observation of hundreds of them to extract population level trends in atmospheric composition and properties. It is therefore paramount to select a target sample that is representative of the diversity of the actual population of exoplanets we want to characterize. At the moment, this diversity is ensured by pre-defining bins in some parameter space (e.g. planet radius and effective temperature, stellar type, etc.) and by trying to fill out as many of these bins as possible with

Yet, the limits of these bins are guided by our current pre-conception of the processes shaping the population we are looking at and remain somewhat arbitrary. In this talk, I will present an alternative, more data-driven procedure to devise the target sample by first clustering the planets in the observable population by an automatic procedure maximizing the diversity of the various clusters. I will show that this approach produces a viable target sample while removing some arbitrary choices in the target selection and increasing the efficiency of the observations. I will then discuss alleys of improvement to include scientific priorities directly at the sample selection level.