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An open-source framework to plan and interpret observations of atmospheric escape in exoplanets

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The last couple of years has seen a significant increase in detections of evaporating exoplanets, owing mainly to the discovery of the metastable helium as a probe for atmospheric escape. This process is thought to be an important factor to explain features in the exoplanet population, such as the hot-Neptune desert and the radius valley. While part of exoplanet community, in general, enjoys a swath of open-source codes that help them plan and interpret observations, the same cannot be said about those who study atmospheric escape. At least, not until recently. We developed a new open-source code, named p-winds, with the objective of supplying the community with an easy to use, well-documented tool designed for observations of evaporating exoplanets. This code allows the forward modeling of spectral signatures (e.g., the metastable He triplet), as well as the statistical retrieval of the atmospheric escape rate and outflow temperature. In this presentation, I will discuss the motivation, implementation, and use cases for p-winds. I will showcase retrievals for several warm Neptunes and hot Jupiters using both new and archival datasets. We use this technique to uniformly search for trends between the atmospheric escape rate vs. the incident high-energy irradiation, as predicted by the energy-limited mass loss hypothesis.