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Title: First Results from the JWST COMPASS (Compositions of Mini-Planet Atmospheres for Statistical Study) Program

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Abstract:
The last decade of exoplanet exploration has revealed that planets between the sizes of the Earth and Neptune are the most common in the Galaxy, seemingly bridging the gap between the types of planets in our own Solar System. Therefore, it is of great interest to understand how these planets formed, which we can investigate via their present-day compositions. However, thus far, the atmospheric compositions of these planets have mostly remained a mystery due to observational limitations. Now that we are firmly in the era of JWST, we can begin to measure, in more detail, the atmospheres of these planets to better understand their evolutionary trajectories. Motivated by this opportunity, we designed COMPASS (Compositions of Mini-Planet Atmospheres for Statistical Study), a JWST program to rigorously compare the presence and compositions of atmospheres for these small planets, and the largest Cycle 1 GO program dedicated to the study of exoplanet atmospheres. Our sample consists of 12 super-Earth/sub-Neptune planets, including four pairs of planets in the same system, allowing for robust statistical inferences about this population of planets. I will briefly introduce our sample to showcase the expected diversity in bulk and atmospheric composition. Then, I will

present early results from the COMPASS program, highlighting outcomes, challenges, and early lessons learned.