



Where to Search for Habitable Worlds

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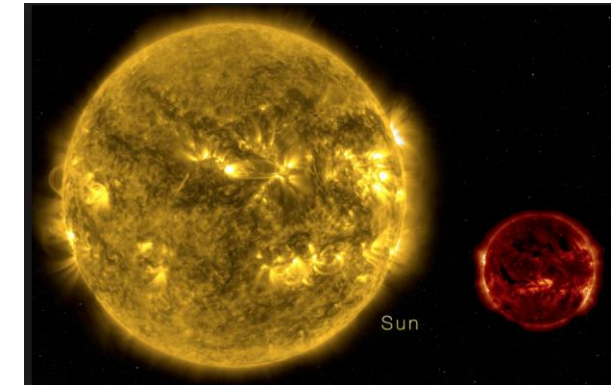
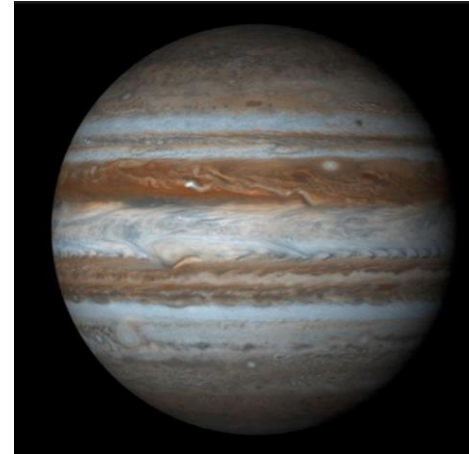
Col Billy Quarles (Georgia Tech)

Exoplanets commonly form in systems quite different than our Solar System. With planet formation N-body models, we examine the formation of Earths in three regimes:

Case 1: Stars without Jupiter analogs

Case 2: Low mass stars

Case 3: Stars with a stellar companion



Can Earths that form in the habitable zones of these stars be habitable?



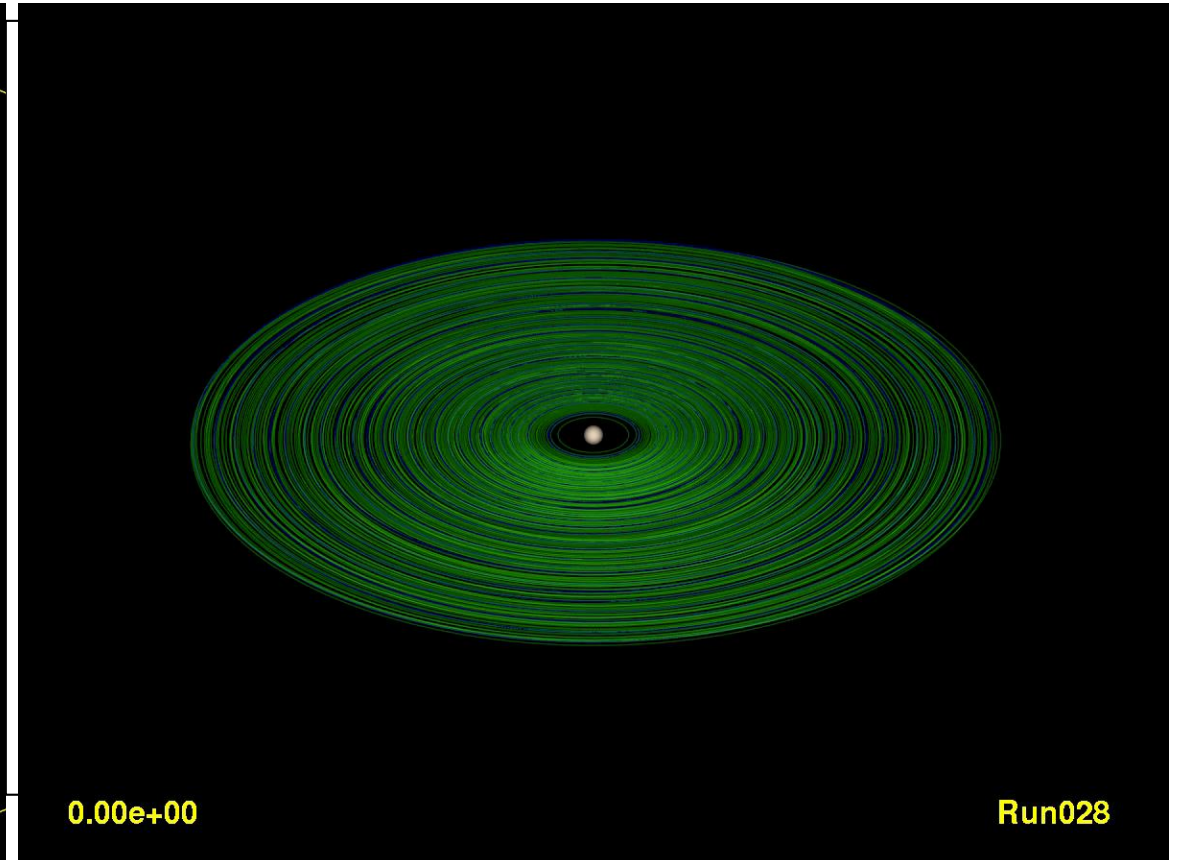
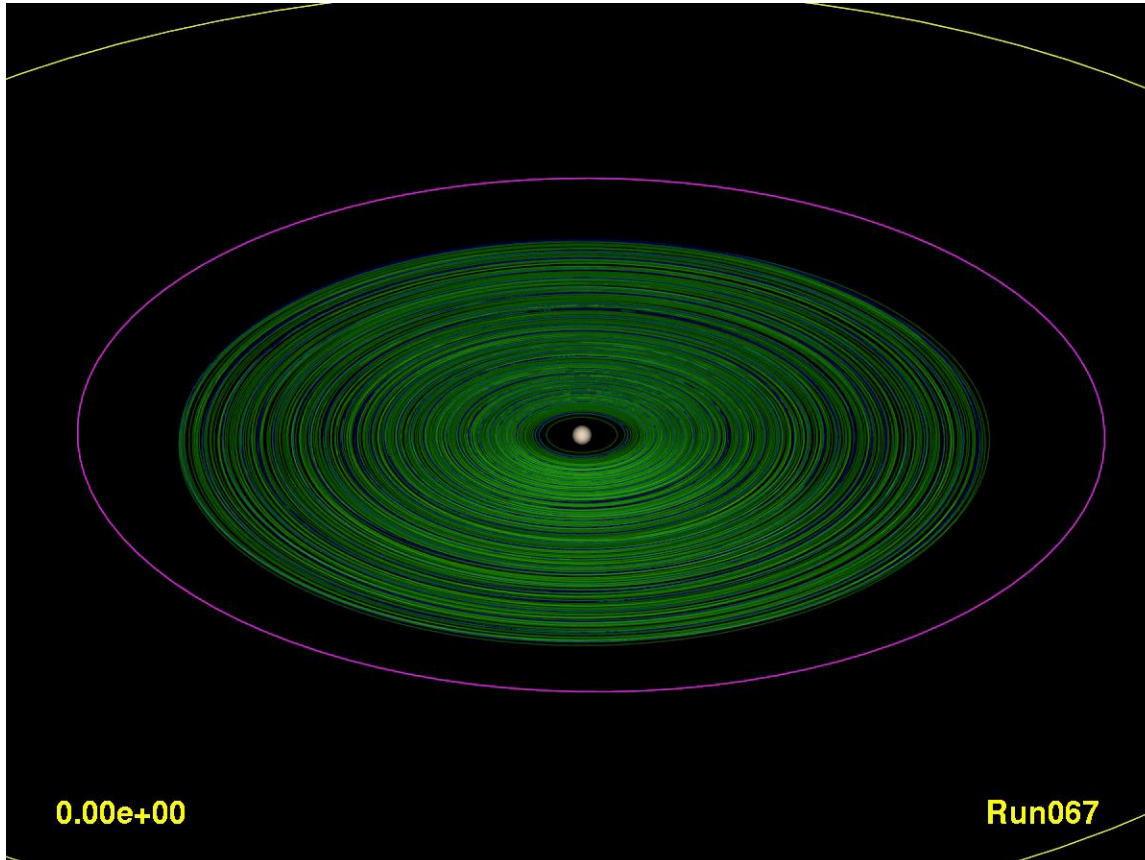
Duration of Award: 3 years



How do giant planets affect Earth analogs?

Jupiter+Saturn

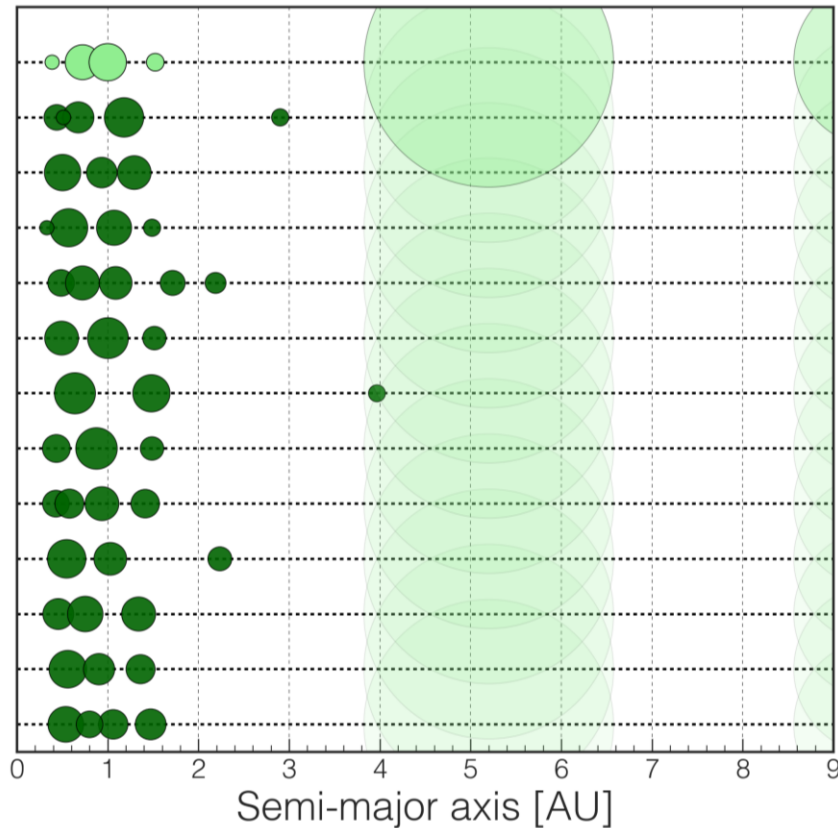
No giant planets



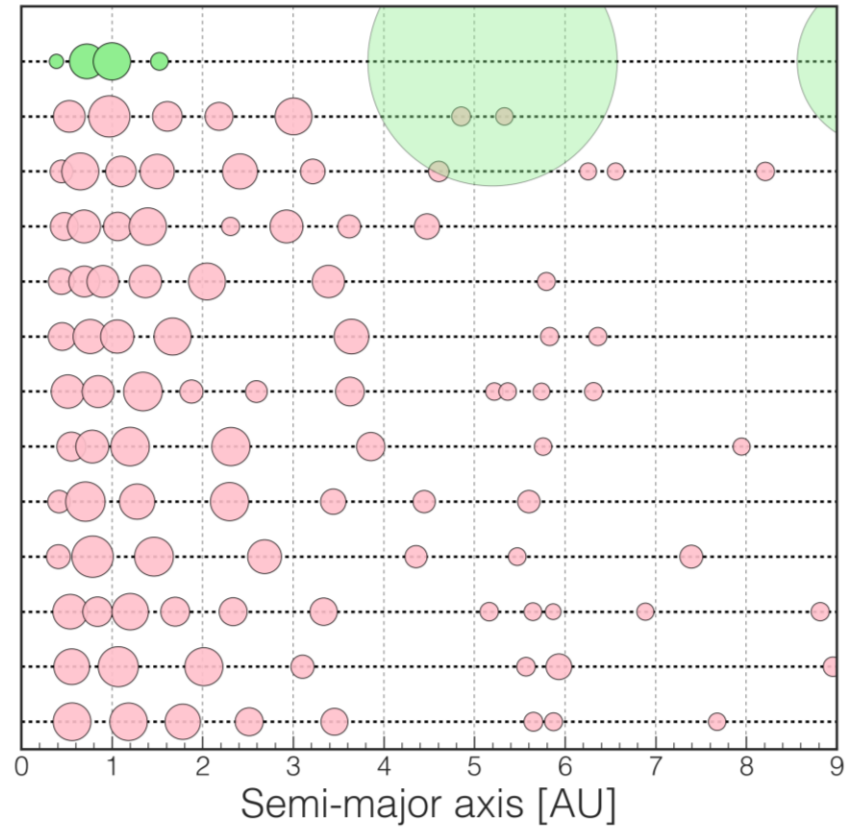


Earths form in both regimes, but giant impact rates, compositions, and habitability factors differ

Jupiter+Saturn



No giant planets





Metrics Delivered

- One paper published, two in prep; PI and Col presented at AAS and DPS; PI served on telescope review panel
- Two proposals not submitted to ROSES (XRP, HW)
- PI serves on two AAS awards committees, two conference organizing committees
- New collaboration to study Venus analogs (with multiple SEEC and external university colleagues)
- Support provided to UMD student (gap year 10% time), UNLV grad student summer intern, project for two high school students

Future work

- Develop catalog of synthetic planetary systems from three regimes, quantify number of Earths, impacts onto Earths, and water/volatile abundances
- Outcome of proposal supports target selection for future missions

