

Total, partial and annular eclipse geometry of exoplanetary systems at exo-syzygy



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Veras & Breedt (MNRAS, 2017, 468, 2672)



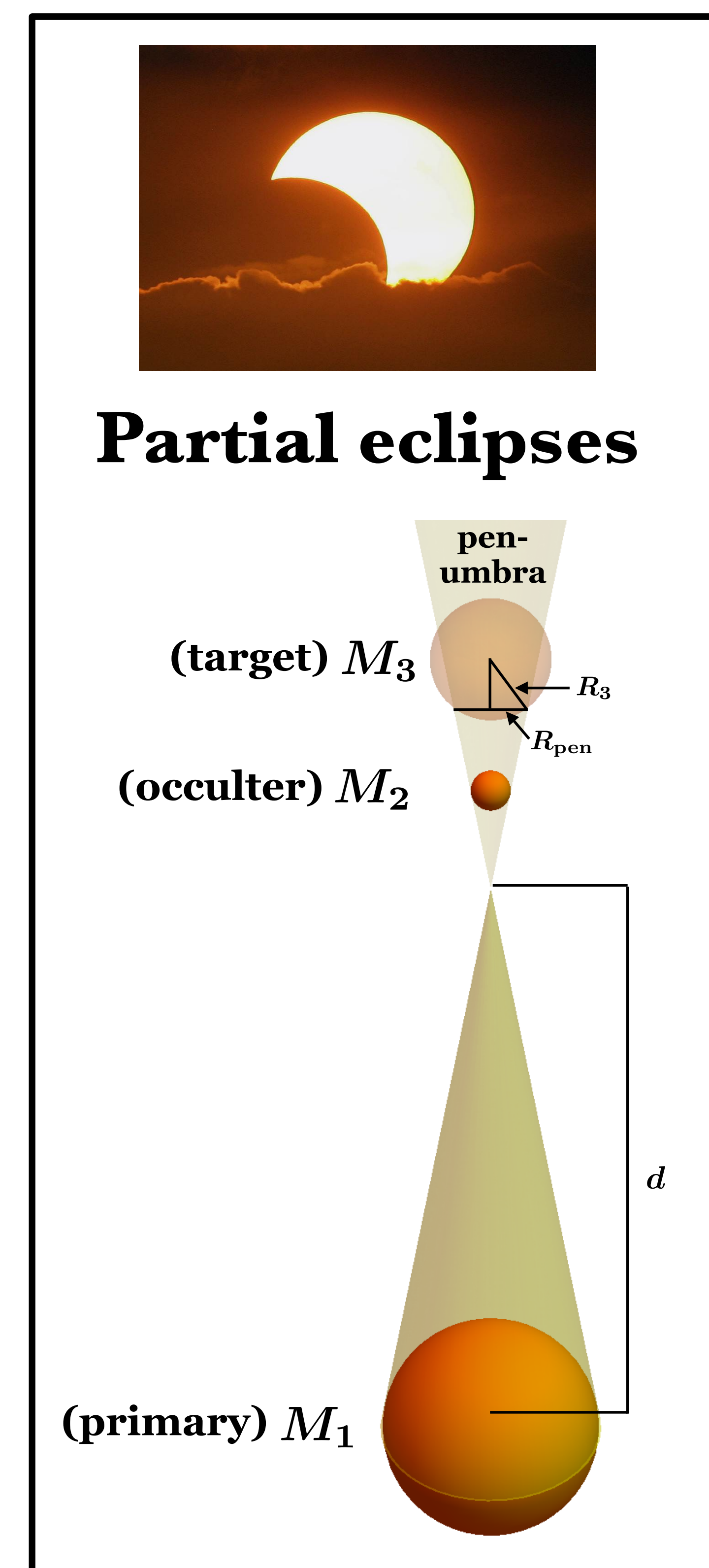
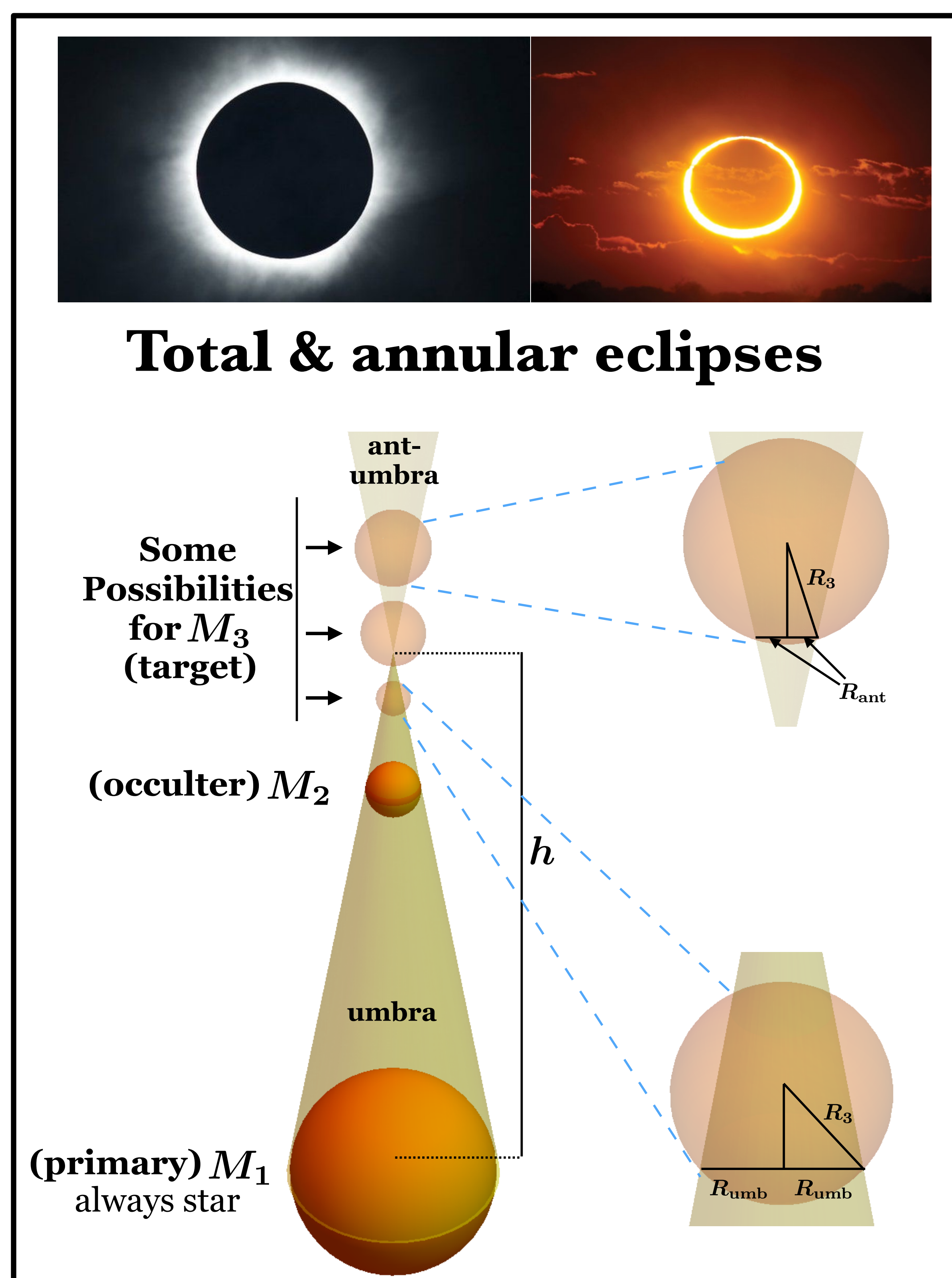
We characterise total, annular and partial eclipses for three geometries:

Case I:
1 star, 2 planets

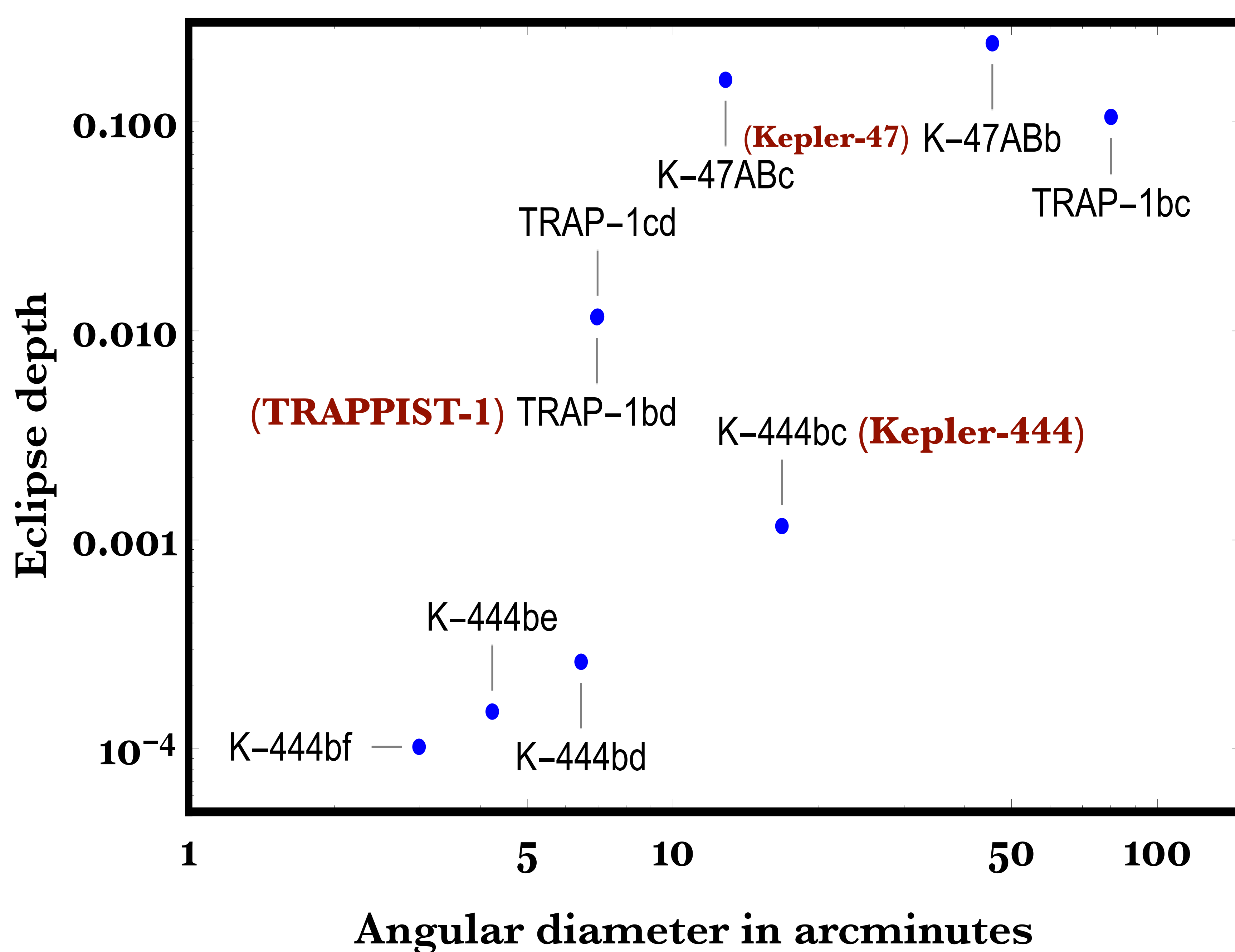
Case II:
2 stars, 1 planet

Case III:
1 star, 1 planet, 1 moon

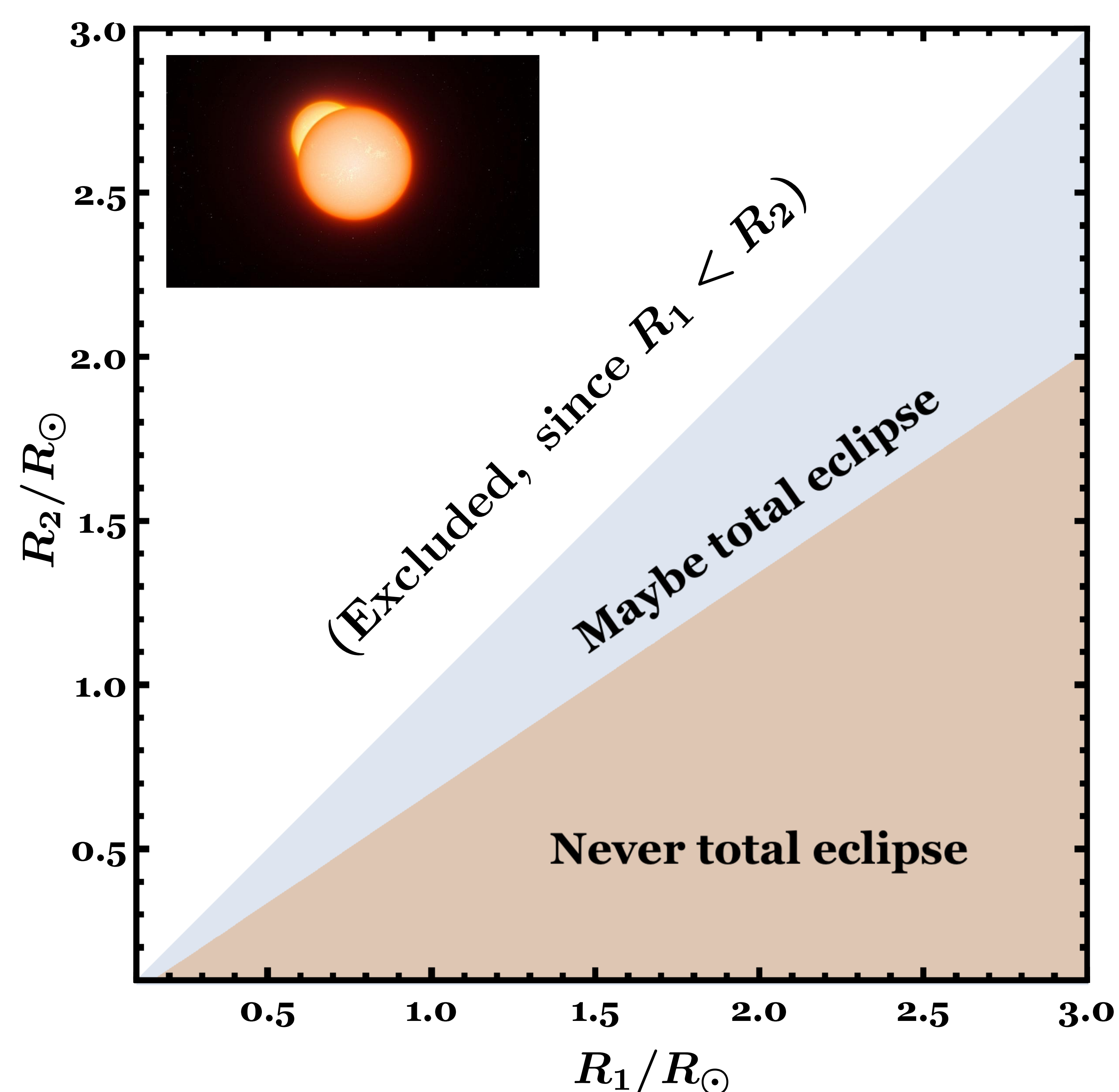
Given only object radii and mutual distances, we derive transit depth, angular diameter on the sky, and shadow radius in a general, algebraic fashion.



Applied to known exoplanetary systems: the eclipse as seen by an exoplanet rover



In which circumbinary systems may we expect to see total eclipses?



An increasing number of exoplanets are found in the habitable zones of their parent stars. The future possibility of sending featherweight spacecraft to these systems prompted us to consider the occurrence of eclipses from an exo-Earth viewpoint. These relationships specify the general conditions for total, partial and annular eclipses to occur in any three-body system.