Observations of Solar System Objects with K2
K2’s View of the Solar System

4* planets

7 moons

370 small bodies

*yes, I counted Pluto…
Pluto
October – December 2015 (C7)
Pluto + Charon -- Campaign 7
Benecchi et al 2018

- Nearly continuous lightcurve covering 12 Pluto days (3 months).
- No changes observed in lightcurve.
- Amplitude smaller than predicted by static frost model, possibly due to volatile transport.
- Consistent with seasonal transport.
K2’s Neptune Light Curve

Main-belt Asteroids in the K2 Uranus Field
Molnar et al (2018)

- Serendipitous photometry of 608 MBAs
- Rotation periods determined for 90 MBAs
What can I learn from the lightcurves of small bodies?

- Amplitude
  - aspect ratio of the body

- Rotation period
  - dynamical history
  - binarity
  - structure* (maybe...)

- Lightcurve
  - spin axis
  - shape model
But, observational biases limit population studies…
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large main belt asteroids
(H < 11)

smaller main belt asteroids
(11 < H < 13)

Marciniec et al 2018
K2 Moving Bodies

Light curves of moving objects from the Kepler/K2 Mission.

C. Hedges, coming soon…
No part of Kepler was designed or built with moving bodies in mind. ➔ but we did it anyway!

Uninterrupted time sampling provides insight into new timescales providing an opportunity to address existing observational biases.

New data products coming!
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*(Kepler image of a known habitable planet.)*