

Monitoring NEO discoveries for imminent impactors

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System description

- Data from MPC Near-Earth Object Confirmation Page (NEOCP)
- Statistical ranging method [1] implemented in OpenOrb [2]
 - Optimized for short time spans
- Solve the orbital inverse problem and propagate the orbital element PDF forward in time to compute the collision probabilities

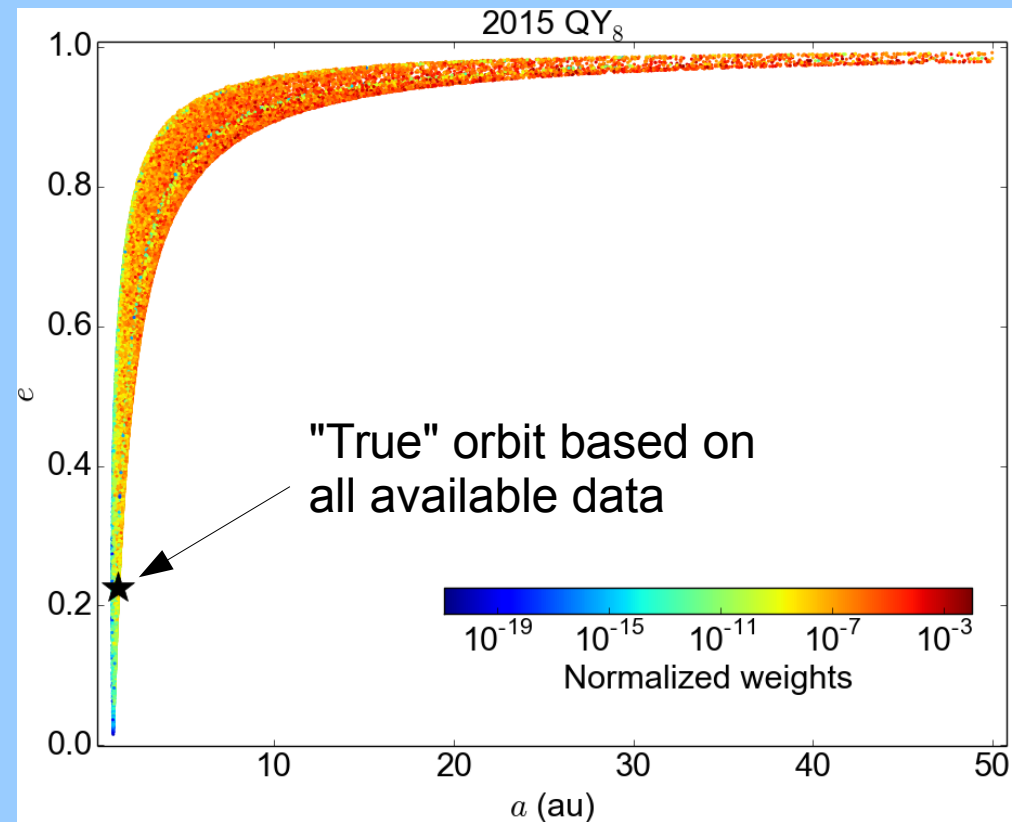
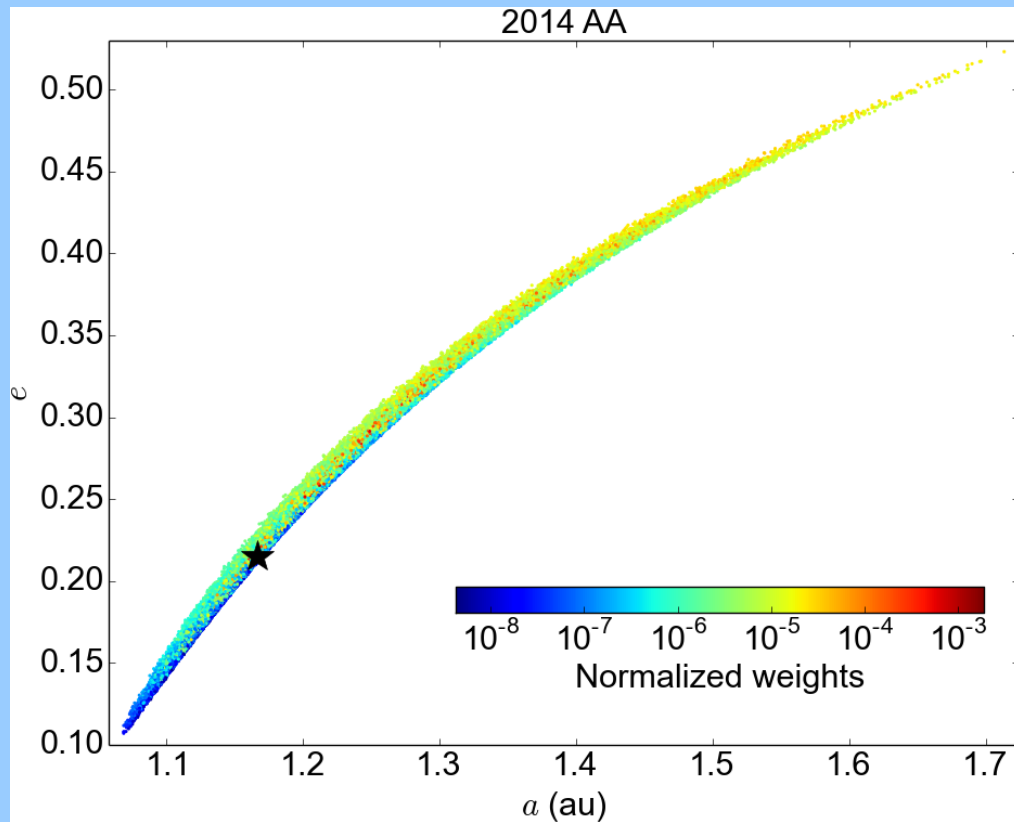
[1] Virtanen, J., Muinonen, K., & Bowell, E. 2001, *Icarus*, 154, 412

[2] <https://github.com/oorb/oorb>

Ranging – 2 examples

Known impactor Jan 2014
- 6 observations

NEOCP Aug 2015
- 3 observations (first set)
- High orbital uncertainties



8 weeks NEOCP

Simulated objects: 3 observations (Pan-STARRS 1)

Simulated objects: 3+3 (5 and 4 days before impact)

The two impactors 2008 TC₃ and 2014 AA

