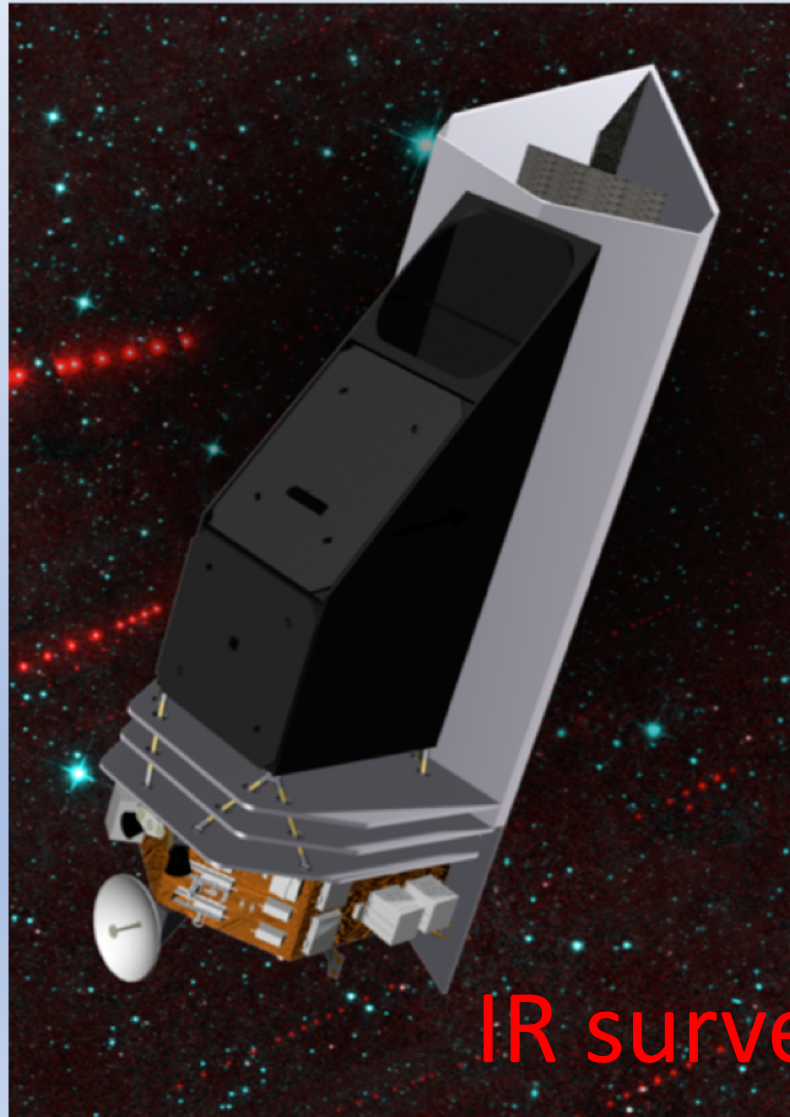


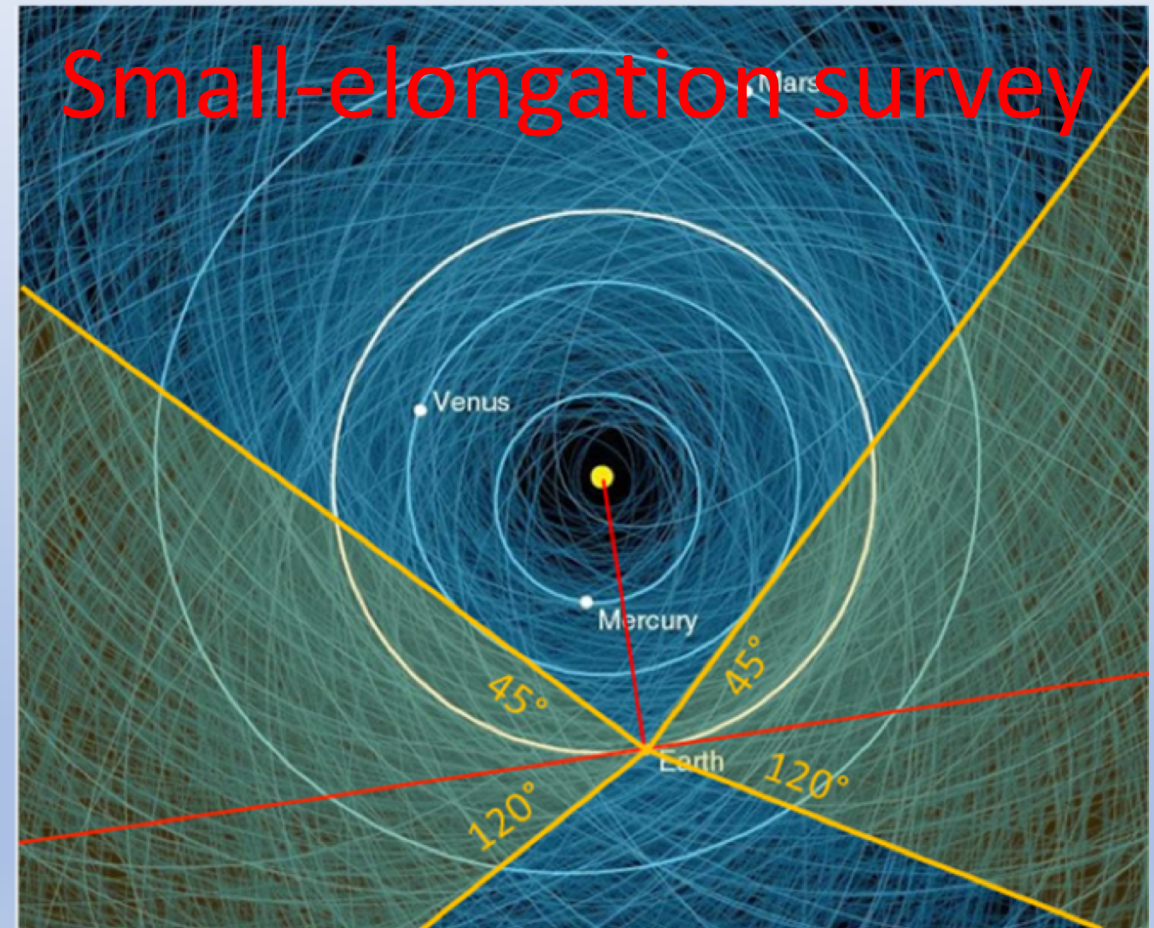
Orbital and Sky-plane Uncertainties for NEO Surveyor Discoveries: Preliminary Update

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The NEO Surveyor Mission—See talk by A. Mainzer for full details



IR survey



Images Courtesy NEO Surveyor Mission

Simulating to evaluate orbital uncertainty

- Run 5 and 10-year survey simulations with current best estimates for NEO and MBA populations
- Full simulation using simulated star background, spacecraft positional uncertainty, astrometric uncertainty
- Assuming only NEO Surveyor detections with full understanding any other detections will improve orbit quality
- The MPC will assemble tracks from tracklets and compute orbits; will also measure time required for linking operations
- Note the MPC has already performed similar tests for Rubin/LSST team so the machinery is in place

What we'll Evaluate

- Track objects from shortest arcs (6-12 day full observation span) through multi-year arcs
- Will separate NEOs from MBAs so they can be studied separately
- Tabulate both sky-plane and orbital element uncertainties by arc length and object type

Current Status

- First MBA simulations have been completed
- Preliminary NEO simulations also completed
- Verifying ephemeris accuracy/precision for both simulated spacecraft and minor planet ephemerides
- Track and tracklet-generating definitions verified
- MPC is ready for data to evaluate interface & orbits
- Results expected late Summer 2021

