

## **On the detection of the Yarkovsky effect on near-Earth asteroids by means of Gaia**

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The Gaia mission of the European Space Agency (ESA) will observe a large number of asteroids and other small Solar System objects for 5 years, up to a magnitude limit  $V=20$ . The expected astrometric single observation precision of the mission is around 0.2 milli-arcseconds (mas) at  $V = 15$ , or 2 mas at  $V = 20$ . At this precision level, subtle non-gravitational perturbations on the orbits of small asteroids, such as the Yarkovsky effect, are in principle measurable.

The latter, which causes a slow drifting of the orbits of km-sized asteroids, is due to the emission of thermal photons which carry off momentum. The Yarkovsky effect is believed to play a role in the delivery of near-Earth asteroids (NEAs) from the main belt, in the spreading of the orbital elements of asteroid families, and in the orbital evolution of potentially hazardous asteroids.

We will present a set of simulations devoted to study how this effect can be detected by Gaia measurements and how asteroids' physical parameters can be constrained from the Yarkovsky astrometric signal.