



## **NEOROCKS - The NEO Rapid Observation, Characterization and Key Simulations**

The perfection of astronomical observation systems led to an increasing discovery rate of near-Earth objects (NEOs). NEOs are asteroids, comets and large meteors that intersect Earth's orbit, representing a possible crash threat. As a consequence, it is significant to increase knowledge on their physical characterisation as well as the number of discovered NEOs to provide effective defence of citizens and infrastructures in the event of a collision. The EU-funded NEOROCKS project proposes an innovative method to perfect observational operations, support modelling and simulation work, promote international strategy and reduce response times. A group of expert astronomers using large aperture telescopes with sophisticated instrumentation will evaluate how fast follow-up observations are performed on newly discovered NEOs.

NEOROCKS improves knowledge on physical characterization of Near Earth Objects (NEOs) for planetary defense. NEOROCKS connects expertise in performing small body astronomical observations and the related modelling needed to derive their dynamical and physical properties, to the pragmatic planetary defense approach, which aims to provide operational loops and information systems to protect citizens and ground infrastructures from potential threats.

The challenge for physical characterization is to keep up with the increasing NEO discovery rate. The challenge for planetary defense is to keep up with the trend of NEO discoveries dominated by small-size objects near the Earth, capable to produce damage in case of impact. Among them, are "imminent impactors" with short warning times.

NEOROCKS proposes an innovative approach, focused on:

- a) a team of expert astronomers with access to large aperture telescopes equipped with state of the art instrumentation;
- b) investigating the relationship between orbit determination of newly discovered objects and quick execution of follow-up observations, to provide SW technologies to face imminent impactors threats;
- c) profiting from European industrial expertise on Space Situational Awareness (SSA) to plan and execute breakthrough experiments on remote tasking of highly automatized robotic telescopes for rapid response;
- d) extremely high standards in data dissemination, thus scaling up results to global level and exploiting results (through ASI Space Science Data Centre).

NEOROCKS will optimize observational activities, enhance modelling and simulation tasks, foster international coordination and speed-up response times. It will ensure availability of results and public education. It joins top scientists with extensive NEO observation and physical characterization expertise, governmental institutions with access to large infrastructures, industrial partners participating in SSA programs and expertise in outreach and management.

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