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PAPER TITLE

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Extended Abstract—

AN (HISTORICAL) OVERVIEW OF PLANETARY DEFENSE INITIATIVES

Asteroid impact avoidance comprises a number of methods by which near-Earth objects (NEO) could be diverted, preventing destructive impact events. Beginning with impact events millions of years ago, our planet has been affected by NEOs. Several initiatives have been launched over the years to coordinate international efforts to prepare and plan for a potentially planet-threatening asteroid impact event. While the popularity of the 2021 movie Don't Look Up helped to raise awareness of the possibility of avoiding NEOs, the efforts to come up with impact mitigation possibilities have commenced much earlier. From the 1992 NASA-sponsored Near-Earth-Object Interception Workshop hosted by Los Alamos National Laboratory to modern days international collaborative efforts, there is a wide range of initiatives taken. There are national initiatives such as those of NASA and international ones such as SMPAG¹ and IAWN². UNCOPUOS is an intergovernmental body that has planetary defence on its agenda.³ Then there is the Spaceguard Foundation (SGF), a private organization based in Frascati, Italy, whose purpose is to study, discover and observe near-Earth

¹ http://www.unoosa.org/oosa/en/ourwork/topics/neos/smpag_iawn.html - accessed 2023-03-23

² Ibid.

³ Ibid.

objects (NEO) and protect the Earth from the possible threat of their collision⁴. The foundation is non-partisan, non-political and non-profit, and acts as an international organization grouping together the spaceguard organizations in various countries, as well as individual astronomers and organizations interested in the foundation's activities. The NASA Double Asteroid Redirection Test (DART) kinetic impactor spacecraft was launched in November 2021. The probe impacted Dimorphos as a demonstration of a possible planetary defence mission 26 September 2022, 23:14, by deliberately crashing itself into the target at a speed of approximately 6km/s , with the aid of an onboard camera and sophisticated autonomous navigation software . All those initiatives and institutions have aimed and continue to aim at protecting our planet from the potentially disastrous outcome of an unmitigated asteroid encounter – nationally as well as internationally.⁵

The European Space Agency is planning a follow-up mission, dubbed Hera, to be launched in 2024.⁶

⁴ <https://spaceguardcentre.com/about-us/> - accessed 2023-03-23

⁵ <https://www.nasa.gov/planetarydefense/dart/dart-news> - accessed 2023-03-23

⁶ <https://www.heramission.space/> - accessed 2023-03-23

