‘Simply amazing’: MIT professor praises successful NASA asteroid test

By Travis Andersen Globe Staff, Updated October 11, 2022, 3:18 p.m.

In this image made available by NASA, debris ejects from the asteroid Dimorphos, right, a few minutes after the intentional collision of NASA’s Double Asteroid Redirection Test (DART) mission on Sept. 26, 2022, captured by the nearby Italian Space

Agency's LICIACube. On Tuesday, Oct. 5, 2022l, NASA said the spacecraft succeeded in shifting its orbit. (ASI/NASA via AP) ASSOCIATED PRESS

The annoucement Tuesday from NASA that a spacecraft that deliberately plowed into a harmless asteroid millions of miles away succeeded in shifting its orbit during a September test was a stunning development, a Massachusetts Institute of Technology professor said.

"The result of the test was simply amazing," said Paulo Lozano, director of MIT's Space Propulsion Lab and the school's Miguel Alemán Velasco Professor of Aeronautics and Astronautics, via email Tuesday afternoon.

He was reacting to the earlier announcement from the space agency, which had attempted the first test of its kind two weeks ago to see if in the future a killer rock could be nudged out of Earth's way.

The Dart spacecraft carved a crater into the asteroid Dimorphos on Sept. 26, hurling debris out into space and creating a cometlike trail of dust and rubble stretching several thousand miles (kilometers). It took days of telescope observations to determine how much the impact altered the path of the 525-foot (160-meter) asteroid around its companion, a much bigger space rock.

Before the impact, the moonlet took 11 hours and 55 minutes to circle its parent asteroid. Scientists had hoped to shave off 10 minutes but NASA Administrator Bill Nelson said the impact altered the asteroid's orbit by about 32 minutes.

"I believe NASA was expecting a 'mild' change in the orbit of Dimorphos around its larger companion, but instead produced an effect about 25 times larger," Lozano told the Globe. "Since there is very little we really know about the structure and composition of these objects, this 'expectation' had large uncertainty."

The study data, Lozano continued, was inspiring.

“What I find most exciting is that, if this indeed happened to be an asteroid in a collision course with earth (which is not!) and we needed to produce a change in its trajectory as predicted by NASA, we would have succeeded with flying colors and the asteroid would no longer hit us,” Lozano said. “That to me is a truly inspirational result. We’re getting closer to have the ability to protect our planet from one of the most destructive forces in nature.”

Martin Elvis, a senior astrophysicist at the Harvard-Smithsonian Center for Astrophysics said in a separate email Tuesday that he also found the data “really impressive.”

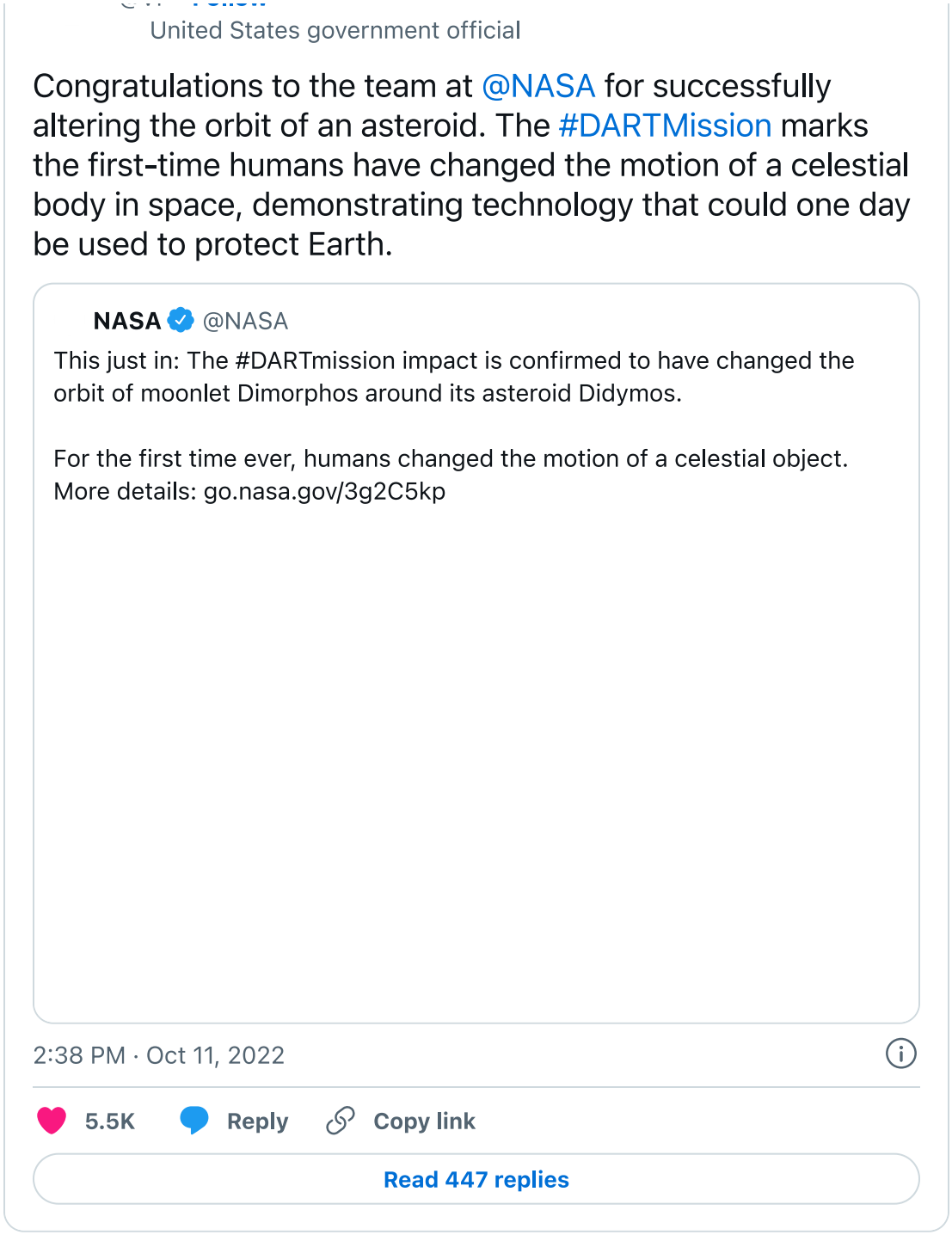
“No one knew how much rock and dust would be kicked off Dimorphos. (That’s why DART was needed.),” Elivis said. “The answer turns out to be a lot. The huge plumes photographed by LICIAcube and then by ground-based telescopes pointed at that, but measuring the period of its new orbit really nails it.”

Elvis also sounded a note of caution.

“Let’s not get smug though,” he said. “Other asteroids may be less obliging, so we at least need to make a bunch more trials of different types of asteroid. We also need to up our game on finding all the asteroids that pose a threat. That’s what NASA’s Near Earth Object Surveyor will do, hopefully sooner rather than later. NEO Surveyor will give us years of warning time.”

Vice President Kamala Harris offered her congratulations to NASA via Twitter Tuesday.

“Congratulations to the team at @NASA for successfully altering the orbit of an asteroid,” Harris tweeted. “The #DARTMission marks the first-time humans have changed the motion of a celestial body in space, demonstrating technology that could one day be used to protect Earth.”



Material from the Associated Press was used in this report.

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