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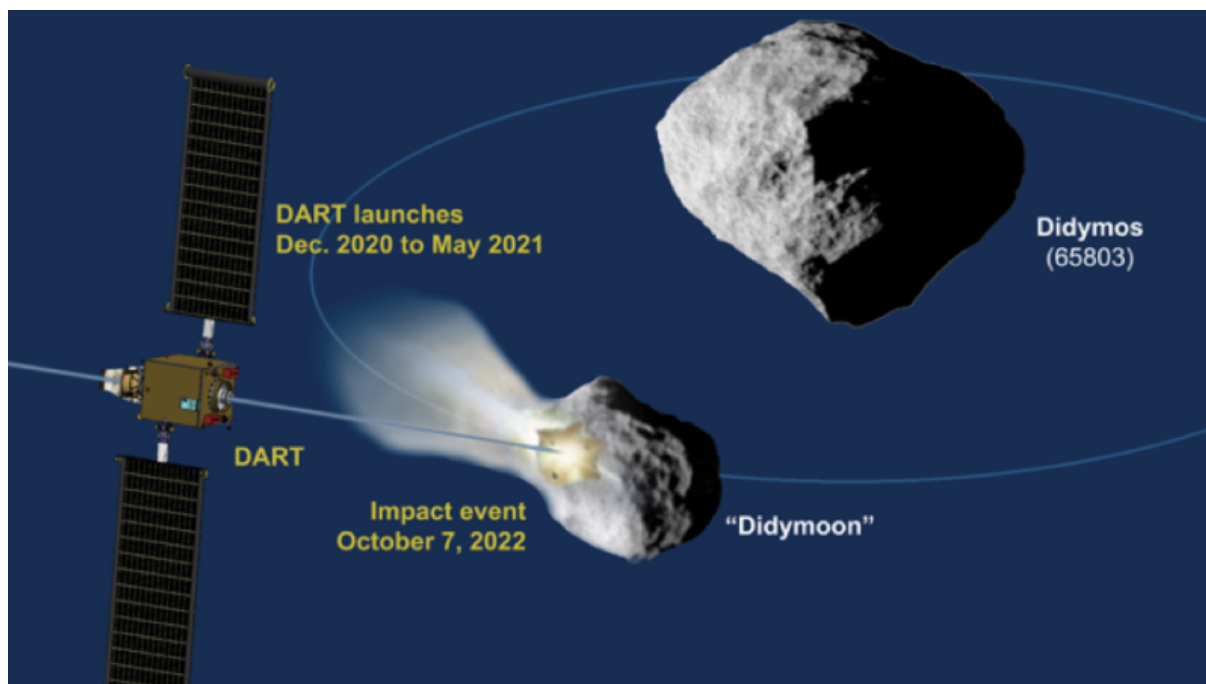
Mission to Slam Spacecraft Into Asteroid Has Begun Final Design and Construction

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Ryan F. Mandelbaum
Thursday 1:55pm •

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Graphic: NASA

A mission to deflect asteroids that might threaten Earth has begun its final design and assembly phase, according to a news release. NASA is testing a technique meant to protect the planet from an impending asteroid strike, and it's a satisfyingly simple one: They're gonna slam the ship into the rock.

The Double Asteroid Redirection Test (DART) will head to a two-asteroid system, consisting of the 800-meter-across (half-mile) Didymos and the 160-meter (124-foot) body orbiting it. The spacecraft will crash into the smaller asteroid, called "Didymoon," at 3.7 miles per second, or 13,320 miles per hour, in an attempt to deflect it.

"This is cool for a lot of reasons. It's NASA's first planetary defense mission," Nancy Chabot, project scientist for the DART mission at the Johns Hopkins University Applied Physics Laboratory, told Gizmodo. "It's not the final solution by any means, but it's the first step for how we'd address potential asteroid hazards and how we would mitigate."

This might sound alarmist, but we've written a lot about the real threat posed by asteroids. Even a 20-meter-across rock, like the one that exploded over Chelyabinsk in 2013, could damage a city and injure hundreds of people. Perhaps, if scientists detect a threatening asteroid with enough lead time, then a mission like DART could change the asteroid's course so it avoids Earth.

DART will launch some time between December 2020 and May 2021. It will rely on a NASA Evolutionary Xenon Thruster – Commercial (NEXT-C), a lighter-weight solar electric thruster, to spiral out of Earth’s orbit and onward to Didymos. It will arrive at the system in October 2022. Cameras and navigation software will direct the spacecraft into the smaller rock. The collision will hopefully change the asteroid’s velocity by a teeny bit, but enough that scientists would detect the change with Earth-based telescopes.


Don’t worry about Didymos changing course to hit Earth or anything like that. Currently, it orbits Didymos once every twelve hours. The DART scientists expect that their mission, if successful, will decrease that orbital time by eight minutes.

This is just a test to determine whether such a method might work. Governments can’t just send a mission like this whenever they feel that an asteroid is a threat, though. Those hoping to divert an asteroid would still need data about it, such as what the rock is made of. That requires better asteroid observations and simulations, something the US government currently lacks.

We’ve written repeatedly that America isn’t ready for a major asteroid impact. Though tasked with cataloging 90 percent of the asteroids larger than 140 meters in diameter, researchers are perhaps only a third of the way there—and there could be issues with the current data. We need better observation strategies. DART won’t be of use against an enormous asteroid that appears out of nowhere because we weren’t observing it. But the experimental mission could help determine whether the deflection strategy is even feasible.

“You can’t just make a small deflection and change if you don’t have the time warning. [DART] is just one aspect of the strategy,” said Chabot. “Identifying what’s out there, tracking, and characterizing is equally important.”

At the very least, slamming a spacecraft into an asteroid feels like the kind of American-flag-waving-science this country craves. I hope there will be video.

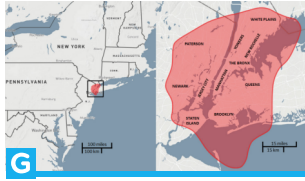
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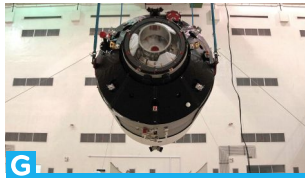
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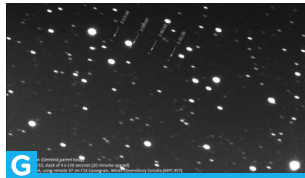
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ABOUT THE AUTHOR



Ryan F. Mandelbaum

Science writer at Gizmodo | I like physics and eating

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