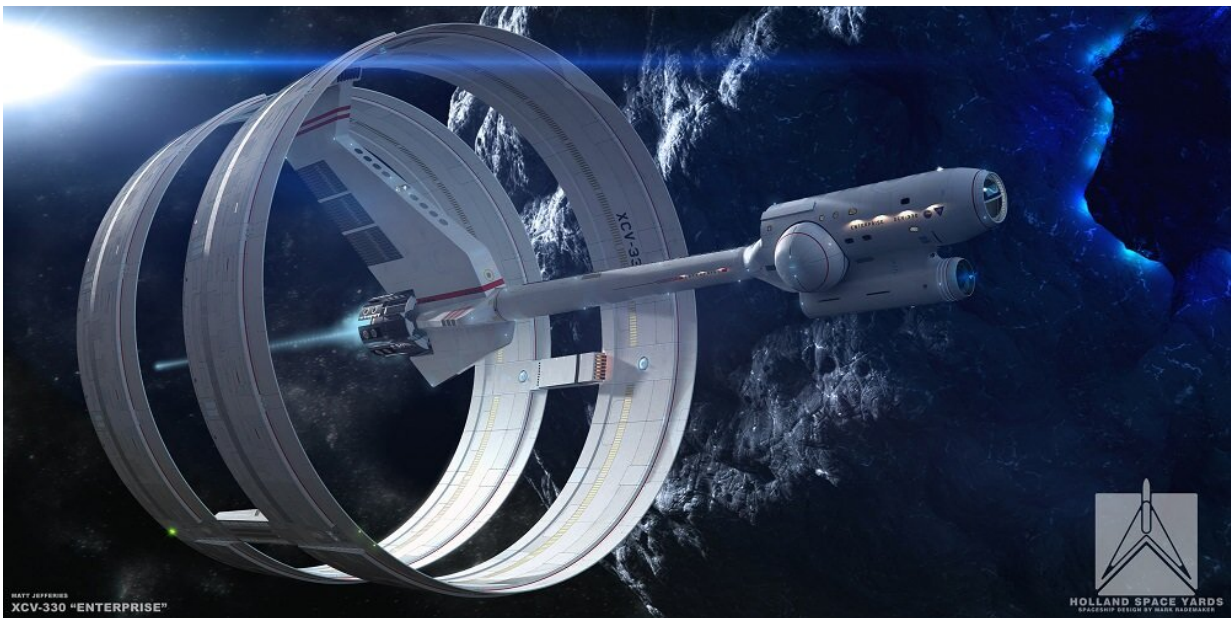


In a comprehensive new test, the EmDrive fails to generate any thrust

April 7 2021, by Paul M. Sutter



The EmDrive is a hypothetical rocket that proponents claim can generate thrust with no exhaust. This would violate all known physics. In 2016, a team at NASA's Eagleworks lab claimed to measure thrust from an EmDrive device, the news of which caused quite a stir. The latest attempt to replicate the shocking results has resulted in a simple answer: The Eagleworks measurement was from heating of the engine mount, not any new physics.

The EmDrive is a relatively simple device: It's an empty cavity that isn't perfectly symmetrical. According to proponents of the EmDrive, by bouncing electromagnetic radiation within the cavity, the tapering in the cavity results in a net thrust of the engine, despite nothing leaking from the drive. In 2016, a team at NASA's Eagleworks lab reportedly measured a net thrust from their EmDrive experiment, which they claimed was a revolution in our understanding of physics and the future of spaceflight.

Physicists were... skeptical. Conservation of momentum dictates that a stationary object cannot move without a net force acting on it, which the Eagleworks experiment claimed to violate. But conservation of momentum has been tested countless times over centuries—in fact, that principle forms the bedrock of almost every single theory of physics. So in essence, almost every time physics is tested, so is the conservation of momentum.

The results of the Eagleworks experiment were not very strong. While the team claimed to measure a thrust, it wasn't statistically significant, and appeared to be a result of "cherry-picking"—the authors watching random fluctuations and waiting for the right time to report their results.

But in the spirit of scientific replication, a team at the Dresden University of Technology led by Prof. Martin Tajmar [rebuilt the Eagleworks experimental setup](#).

And they found squat.

Reporting their results in the Proceedings of Space Propulsion Conference 2020, Prof. Tajmar said, "We found out that the cause of the 'thrust' was a thermal effect. For our tests, we used NASA's EmDrive configuration from White et al. (which was used at the Eagleworks laboratories, because it is best documented and the results were

published in the *Journal of Propulsion and Power*.)

With the aid of a new measuring scale structure and different suspension points of the same engine, we were able to reproduce apparent thrust forces similar to those measured by the NASA team, but also to make them disappear by means of a point suspension."

In essence, the Eagleworks EmDrive apparent thrust came from a heating of the scale they used to measure the [thrust](#), not from any movement of the drive itself.

"When power flows into the EmDrive, the engine warms up. This also causes the fastening elements on the scale to warp, causing the scale to move to a new zero point. We were able to prevent that in an improved structure," Prof. Tajmar continued.

His conclusion puts the final nail in the coffin for EmDrive dreams: "Our measurements refute all EmDrive claims by at least three orders of magnitude."

Provided by Universe Today

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