

A Star Is Eating a Brown Dwarf — Slowly

This 300-light-year system reveals a new energy transfer mechanism.

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THE DATA

1/100,000 of an Earth's mass

Annual accretion rate

The red dwarf star in ZTF J0440+2325 consumes its brown dwarf companion at this rate.

This minuscule but steady mass transfer—equivalent to 1.3 trillion one-pound burritos per second—demonstrates a sustainable, long-term energy exchange between celestial bodies. Unlike sudden stellar engulfment, this process is stable over billions of years, suggesting a naturally occurring, continuous energy flow. Such a mechanism could inform long-duration energy modeling in fusion or gravitational systems.

Source: MIT News • Published October 05, 2026

<https://news.mit.edu/2026/astronomers-catch-star-slowly-snacking-on-brown-dwarf-1005>



01

Steady accretion as a model for sustainable energy flow

In AI-driven energy modeling, such systems challenge the assumption that energy transfer must be explosive or transient. Instead, they suggest that stability emerges from sustained, low-intensity processes—mirroring the efficiency of optimized data-center cooling or grid-balancing algorithms.

02

AI can predict long-term energy stability in dynamic systems

By simulating systems like ZTF J0440+2325, AI learns to identify early signs of instability—such as wobbling orbits or accretion spikes—before they disrupt operations. This preemptive modeling could be applied to grid frequency control, where minute deviations today can lead to blackouts tomorrow.



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