

Can AI Learn to Trust Itself in Nuclear Safety?

Like a physicist guiding her own tools, AI must earn its role in reactor oversight.

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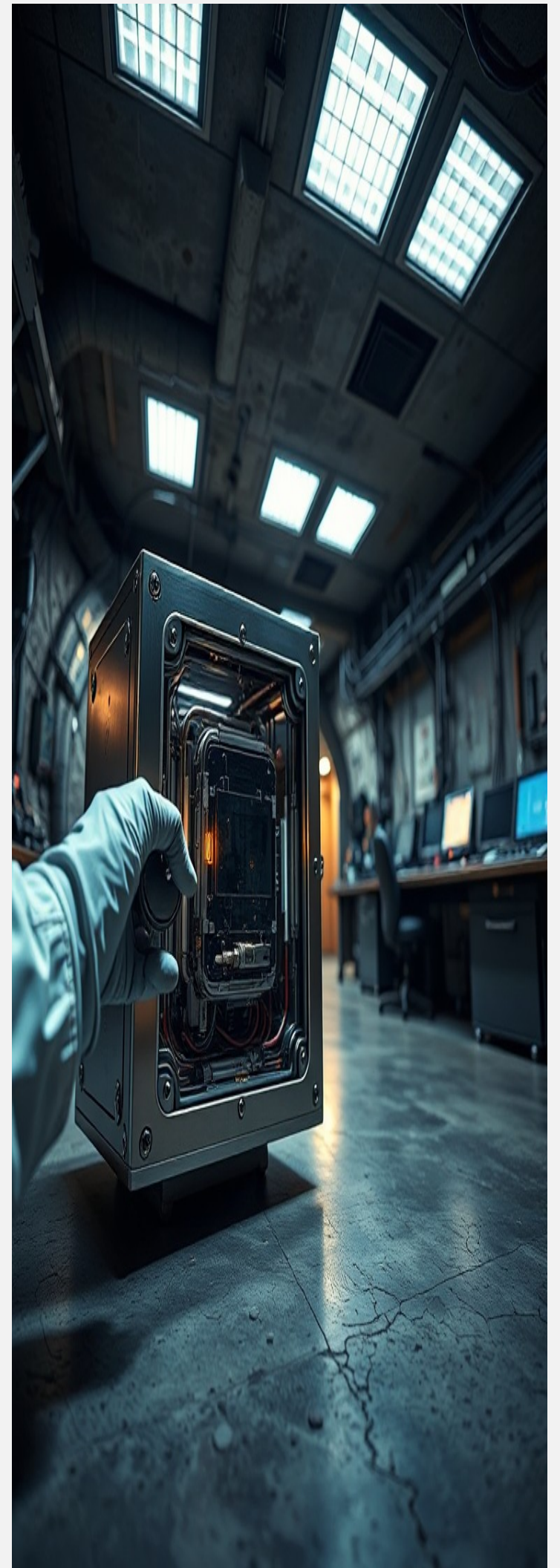
Detectors in Ricochet Experiment

The number of neutrino detectors expanded from two to 18 during Faith Reyes' PhD research.

This exponential growth in detector count mirrors the complexity of modern nuclear monitoring systems. Each new sensor increases data volume and system interdependence, demanding autonomous, adaptive intelligence to manage signal fidelity and noise. The shift from manual oversight to automated framework development reflects a critical transition: trust in AI must be earned through proven reliability in high-stakes environments.

Source: MIT News • Published September 28, 2026

<https://news.mit.edu/2026/probing-fundamental-laws-of-universe-faith-reyes-0925>



01

AI Emerges from Operational Necessity

The same dynamic applies to digital twins and predictive maintenance: they arise not from theoretical ambition, but from the physical and cognitive limits of human oversight in complex, high-reliability systems.



02

Trust Is Built Through Ownership

When engineers feel they've shaped the AI's logic, they are more likely to trust its warnings, accept its recommendations, and defend its role in regulatory reviews. This is not a cultural preference — it's a foundational requirement for AI adoption in nuclear contexts where accountability is non-negotiable.

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