

By Duncan Geere, Wired UK A 30-year mystery as to why the Pioneer spacecraft have slowly been drifting off course is close to being explained — the latest analysis pins the blame on heat. The Pioneer 10 and 11 spacecraft, ...

Science

News for Your Neurons

› Space

› Physics

Share on Facebook

55 shares

Tweet

63

7

Share

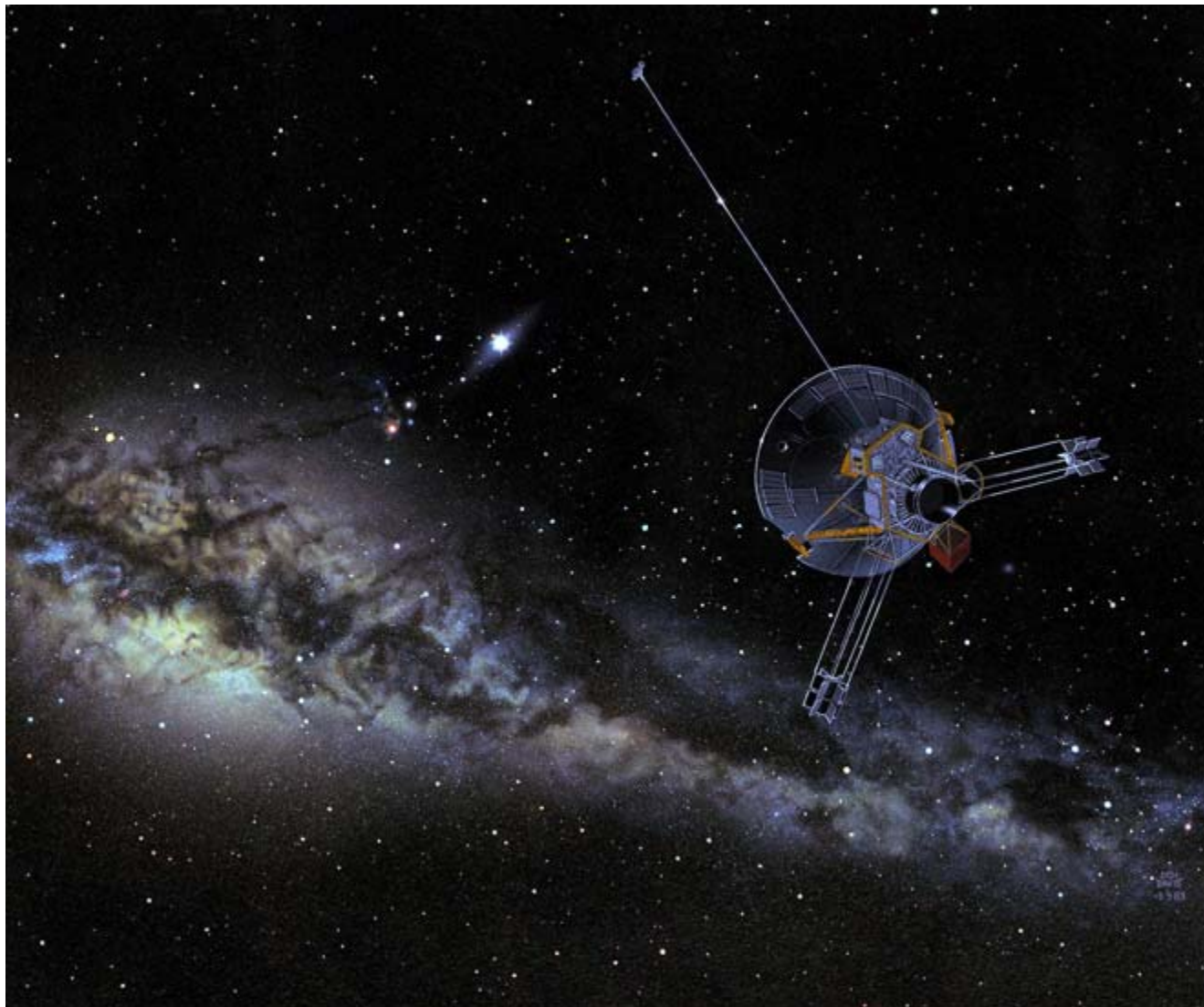
21

# Plutonium Is Hot Suspect in Pioneer Spacecraft Mystery

› By [Wired UK](#)

› 07.26.11

› 9:30 AM



*By Duncan Geere, Wired UK*

A 30-year mystery as to why the Pioneer spacecraft have slowly been drifting off course is close to being explained — the [latest analysis](#) pins the blame on heat.

The Pioneer 10 and 11 spacecraft, launched in 1972 and 1973 respectively, were designed to fly past the [asteroid belt](#) and investigate the Jovian and Saturnian systems. Both are now located in the interstellar medium, and radio contact has been lost, but each is slowing gradually due to the influence of the sun's gravity.

In 1980, an algorithm to study gravitational effects in the outer solar system was concocted by astronomer John Anderson, but it didn't quite work. There was a discrepancy — small but noticeable — between the readings predicted by the algorithm and those actually observed from the Pioneer spacecrafts' radio signal. The phenomenon was named the [Pioneer Anomaly](#).

Physicists struggled to explain the discrepancy, proposing complex theories that even included a suggestion that gravity might behave differently at large distances from the Earth. However, [the most recent analysis](#) suggests a rather more mundane explanation — heat from the plutonium inside the spacecrafts' generators.

If heat is [radiating](#) evenly in all directions from the spacecraft, then there will be no effect on its course, but if there's a difference of as little as five percent between the front and the back then that could explain the difference between the predicted course and the course that's actually been observed. The smoking gun is that the level of deceleration seems to be decreasing at an exponential rate, which tallies with the radioactive decay of the plutonium-238 that powers the two [spacecraft](#). It's not completely out of the question that there might be another culprit, but it's looking increasingly unlikely. NASA is performing its own investigation to compare to the data, but if that comes out with heat as the cause too, then the 30-year mystery may finally be over.

*Image: NASA*

*Source: [Wired.co.uk](#)*

*Via: [Discovery News](#)*

**See Also:**

- › [Space Probe Gets Halfway to Pluto in Record Time](#)
- › [Reactor Drawings Make Nuclear History Beautiful](#)
- › [Giant Crater Is Next Mars Rover Landing Site](#)
- › [Understanding Japan's Nuclear Crisis](#)
- › [Neutrino Transformation Could Help Explain Mystery of Matter](#)
- › [Chemists Inch Closer to Stable Superheavy Atoms](#)
- › [Related](#)
- › [You Might Like](#)
- › [Related Links by Contextly](#)



- › [Plutonium-Powered Space Missions](#)



- › [Plutonium Problem Could End Deep-Space Exploration](#)

