

Catching Magnetic Explosions in Space

What is the science question?

How can we figure out a spacecraft's trajectory through magnetic reconnection explosions in space?

What were your findings?

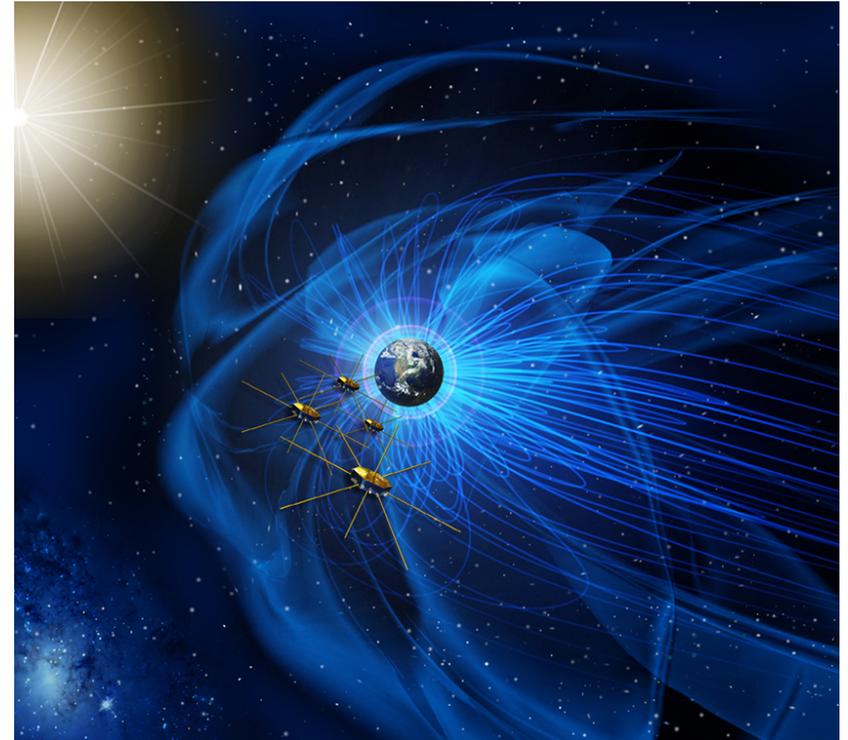
We developed a new technique for understanding spacecraft measurements of magnetic reconnection by combining MMS spacecraft observations with state-of-the-art computer simulations.

What was the impact?

Our method helped us understand the motion of the first electron-scale magnetic reconnection region ever observed in space.

Why does it matter to non-scientists?

Magnetic reconnection explosions allow the Sun's solar wind radiation to penetrate Earth's magnetic shield, trigger dangerous solar eruptions that fuel the auroras (northern and southern lights), and influence space-weather predictions needed for ensuring the safety of astronauts and satellites.



The four Magnetospheric Multiscale (MMS) spacecraft fly in tetrahedral formation to solve the mystery of magnetic reconnection, the universe's favorite way to make things explode.