

# Did You Say 1.2 Billion Particles Per Month?

by Lori Keith for Johnson Space Center  
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If you want to understand the origin of the universe, you need a lot of power. That's exactly why the International Space Station is the perfect research platform for the Alpha Magnetic Spectrometer-02, or AMS-02. The 240-foot long solar arrays that power systems supporting life on the space station also provide the power for AMS's high energy physics research.



Scientists use AMS to collect and sift through charged particles as they look for dark matter and anti-matter seeking to unlock the secrets of our universe. This information could result in the rewrite of physics textbooks in much the same way as the Hubble Space Telescope discoveries rewrote astronomy texts.

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The AMS-02 is a state-of-the-art particle physics detector constructed, tested and operated by an international team involving 60 different institutes and 16 different countries - more than 600 people worldwide. The spectrometer will collect information from cosmic sources originating from stars and galaxies millions of light years beyond the Milky Way.

The collected and analyzed cosmic ray data could also help to advance and perhaps redefine much of what is known about the low Earth orbit space radiation environment.

This unique exploration investigation seeks to understand fundamental issues shared by physics, astrophysics and cosmology on the origin and structure of the universe, possibly even identifying a new form of matter.

In an interview, Trent Martin, NASA's Johnson Space Center Project Manager for the AMS aboard the station, stated the AMS detectors collect and measure data at a rate of seven gigabits per second. This is like filling a one-gigabyte USB memory stick every second!

"The AMS was essentially designed to probe the foundations of the universe," Martin said.

"With accurate data, we hope to be able to potentially redefine what we know as high energy physics today."

During the interview, Martin shared details about the spectrometer, his background, and answered several questions posted to the AMS Twitter account. Cosmic radiation is a significant obstacle to a manned space flight to Mars, and accurate measurements of the cosmic ray environment are needed to plan appropriate countermeasures.

The AMS is measuring almost double the amount researchers expected, at a rate of about 1.2 billion particles per month. The particle count is always available on the AMS website.

[http://www.space-travel.com/reports/Did\\_You\\_Say\\_1\\_point\\_2\\_Billion\\_Particles\\_Per\\_Month\\_999.html](http://www.space-travel.com/reports/Did_You_Say_1_point_2_Billion_Particles_Per_Month_999.html)