NASA awards $100K to Veronica Bindi to use AMS-02 data to reduce the radiation risks for astronauts in space

The Human Research Program at NASA supports investigation into understanding and quantifying health impacts of space radiation. The final goal is to ensure that crew members can safely live and work in space, including locations beyond Low Earth Orbit, without exceeding acceptable radiation health risks.

Interplanetary space is permeated by radiation, including high velocity protons and nuclei of helium and elements with higher atomic number, such as Carbon and Iron, called cosmic rays. The particles abundant enough to constitute significant risk for the health of humans working and living in space have energies up to tens of GeV/nucleon. Quantifying the radiation exposure from galactic cosmic rays that astronauts will receive is a critical aspect of risk assessment for both International Space Station (ISS) operations and long duration missions to the Moon or Mars.

NASA offered a one year grant of $100,000 to Veronica Bindi, Assistant Professor at the University of Hawaii at Mānoa Department of Physics and Astronomy, with the aim to improve the galactic cosmic ray models that predict the radiation dose absorbed by astronauts, using the new and extremely precise data from the Alpha Magnetic Spectrometer (AMS-02).

AMS-02 is a state-of-the-art magnetic spectrometer onboard the ISS since 2011, that measures galactic cosmic rays in the energy range from 125 MeV to approximately the TeV with the primary science goals of studying dark matter and primordial antimatter.

During this grant, Bindi and her group will focus on the analysis of monthly proton fluxes measured during the first years of AMS-02 operations on the ISS in the energy range from 1 to 10 GeV, where this radiation is expected to be the most harmful. The work accomplished during this grant will form the foundation of a long term grant with NASA to incorporate AMS-02 measurements of heavier elements and solar energetic particle events into the galactic cosmic ray models.

For more information related to the AMS-02 group at UH please visit: http://www.phys.hawaii.edu/ams02/