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Observation of Complex Time Structures in the Cosmic Ray Fluxes by the Alpha Magnetic Spectrometer on the ISS

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We present high-statistics, precision measurements by AMS of the detailed time and rigidity dependence of the primary cosmic-ray electron, positron, proton and helium fluxes over 79 Bartels rotations from May 2011 to May 2017 in the energy range from 1 to 50 GeV. For the first time, the charge-sign dependent modulation during solar maximum has been investigated in detail by leptons alone. We report the observation of short-term structures on the timescale of months coincident in all the fluxes. These structures are not visible in the positron-to-electron flux ratio. The precision measurements across the solar polarity reversal show that the ratio exhibits a smooth transition over ˜800 days from one value to another.

Primary authors: GRAZIANI, Maura (KIT - Karlsruhe Institute of Technology (DE)); VAGELLI, Valerio (Universita e INFN, Perugia (IT)); MACHATE, Fabian (Rheinisch Westfaelische Tech. Hoch. (DE))

Presenter: ROZZA, Davide (Universita & INFN, Milano-Bicocca (IT))

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