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From cosmic rays to noise characterization in the microwave detector experiment

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Simulating the effect of the Cosmic Rays (CR) on the signal of the High Frequency Telescope (HFT) of microwave detector experiment from space implies a computational expensive chain of Monte Carlo (MC) simulations. It started with the CR spectra at L2 mission location, then we propagated them into the detector materials, extract the hits deposited energies on the sensible area, propagate the heat in the material and convert them in the Transition Edge Sensor (TES) bolometers response. In this talk, we will illustrate the process of generating Time Ordered Data (TOD) and their features. The samples have to be representative of the 3 years mission acquisition period. So here we placed us with the Machine Learning (ML) CRAB code to perform data augmentation. The TODs are expanded with a convolutional Generative Adversarial Network (GAN), tuned on the MC simulated noise in HFT.

Presenter: CAVALLOTTO, Giovanni (INFN Milano Bicocca)

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