Design and simulation of a cost-affordable Cosmic Ray Muon Tomographer

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- **What is this contribution about?**

  This poster presents the design and GEANT4 simulation of a prototype muon tomographer using current and cost-affordable technology. The tomographer consists of two detectors placed before and after the object to be analyzed. Each detector is made of two planes of 8×8 units (plastic scintillator plus a silicon photomultiplier) arrays.

- **Why is it relevant / interesting?**

  This design is low-cost, easy to build, uses current technology and has an angular resolution of $1\ ^{\circ}$.

- **What have we done?**

  We have searched to discriminate different materials (e.g. lead, concrete, iron, water, aluminum) by measuring the absorption and scattering angle of a muon beam after passing an object under analysis. We have optimized the geometrical parameters of the experimental setup to obtain the best separation power.

- **What is the result?**

  We have obtained the geometrical parameters (distance between the two planes and between the detector and the object under study) to differentiate materials using the absorption and scattering angle methods. We can identify lead and iron from other materials.