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slic & lcdd: A Detector Response Simulation Program

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As the complexity and resolution of particle detectors increases, the need for detailed simulation of the experimental setup also increases. Designing experiments requires efficient tools to simulate detector response and optimize the cost-benefit ratio for design options. We have developed efficient and flexible tools for detailed physics and detector response simulation which builds on the power of the Geant4 toolkit but frees the end user from any C++ coding. The primary goal has been to develop a simulation program and I/O formats to allow physicists from universities and labs to quickly and easily contribute to detector design without requiring either coding expertise or experience with Geant4.

We have developed the Geant4-based detector simulation program, slic, which employs generic I/O formats as well as a textual detector description. Extending the pure geometric capabilities of GDML, LCDD enables fields, regions, sensitive detector readout elements, etc. to be fully described at runtime using an xml file. We provide executable programs for Windows, Mac OSX and Linux.

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