

## AbstractID: 3740 Title: SIRIT: An Electron-Gamma Shower Code with a New Structure

**Purpose:** To investigate the feasibility of a new structure for Monte Carlo particle transport simulation codes that allows users to modify any aspect of the "physics" of the simulation without knowing any details about the code system. Users can add their own code to simulate interactions or change the methods used to calculate condensed histories. A GUI is provided to run Monte Carlo simulations. From this GUI, users can also test/evaluate each interaction individually, and the calculation methods used to simulate condensed histories.

**Method and Materials:** SPIRIT is being developed in Java on PCs running Linux and Windows operating systems. The Java platform was chosen because it offers platform independence, allows the code to be run both as an application and an applet, and is a powerful development environment, especially for GUIs and 1D/2D/3D/4D graphics.

**Results:** SPIRIT is flexible and user-friendly, since it is an object oriented code system that does not use a preprocessor or macros, and does not require the user to know a "non-standard" language. Within a few hours, we expect new users will be able to use the program; add, remove, or replace interaction simulations; and test the influence of their modifications on the accuracy and speed of shower simulations.

**Conclusion:** We have developed the first Monte Carlo transport code that allows users to change any part of the "physics" of the simulation by using a simple template, that requires no knowledge about the rest of the code system. Primary applications of SPIRIT, which is still being extended, include education and research related to Monte Carlo code development.