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The LiC Detector Toy Program

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We present the "LiC Detector Toy" ("LiC" for Linear Collider) program, a simple but powerful software tool for detector design, modification and geometry studies. It allows the user to determine the resolution of reconstructed track parameters for the purpose of comparing and optimizing various detector set-ups. It consists of a simplified simulation of the detector measurements, taking into account multiple scattering and measurement errors, followed by full single track reconstruction using the Kalman filter. The detector model is built from geometry files describing the layout of the detector layers, their material, their accuracy and their efficiency. In addition, it contains information about passive scattering layers and their material budget. The reconstructed tracks can be written to a text file and passed on to a vertex reconstruction program. The tool is written in MATLAB and may be installed on a laptop. For the ease of use, the program is integrated into a Graphical User Interface (GUI). We describe the main components of the tool and show results from performance studies with the LDC and SiD detector concepts at the ILC, and Super-BELLE at KEK.

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