21st International Conference on Computing in High Energy and Nuclear Physics **CHEP2015** Okinawa Japan: April 13 - 17, 2015

Contribution ID: **454**   Type: **poster presentation**

The Linear Collider Software Framework

Detectors at future electron-positron linear colliders such as ILC or CLIC will require unprecedentedly precise tracking, vertexing, and calorimetry in order to meet the ambitious physics goals of the experimental program. The physics performance of different detector geometries and technologies has to be realistically estimated. These assessments require sophisticated and flexible full detector simulation and reconstruction software. At the heart of the linear collider detectors lies the particle flow reconstruction. The goal of unambiguously associating tracks and showers to individual particles requires the combination of precise, lightweight trackers combined with fine-grained "imaging"calorimeters and advanced clustering software. Detailed physics and detector optimization studies are taking place in the CLICdp, ILD, and SiD groups. The similarities between the different detector concepts allow for the use of common software tools. All the concepts share an event data model and persistency format which enables the sharing of files and applications across the concepts. Particle flow clustering, vertexing and flavor tagging is already provided by standalone packages via lightweight interfaces. In the near future the geometry information for all detector layouts will be provided by a common source for the simulation and reconstruction programs, providing further re-use of software between the collaborations. In addition, a track reconstruction package is currently under development. The sharing and development of flexible software tools not only saves precious time and resources, the use of common tools for different detectors also helps to uncover bugs or inefficiencies that would be harder to spot without multiple users. The concept of generic software tools and some of the programs themselves can be beneficial to experiments beyond the linear collider community.

Primary author: GRAF, Norman Anthony (SLAC National Accelerator Laboratory (US))

Co-authors: MIYAMOTO, Akiya (High Energy Accelerator Research Organization (JP));   SAILER, Andre (CERN); GAEDE, Frank-Dieter (Deutsches Elektronen-Synchrotron (DE))

Presenter: GRAF, Norman Anthony (SLAC National Accelerator Laboratory (US))

Track Classification: Track2: Offline software