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Extra Dimensions: Creating 3D content in PDF

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Experimental science is replete with multi-dimensional information which is often poorly represented by the two dimensions of presentation slides and print media. Past efforts to disseminate such information to a wider audience have failed for a number of reasons, including a lack of standards which are easy to implement and have broad support. Adobe's Portable Document Format (PDF) has in recent years become the de facto standard for secure, dependable electronic information exchange. It has done so by creating an open format, providing support for multiple platforms and being reliable and extensible. By providing support for the ECMA standard Universal 3D (U3D) and the ISO PRC file format in its free Adobe Reader software, Adobe has made it easy to distribute and interact with 3D content. Until recently, Adobe's Acrobat software was also capable of incorporating 3D content into PDF files from a variety of 3D file formats, including proprietary CAD formats. However, this functionality is no longer available in Acrobat X, having been spun off to a separate company. Incorporating 3D content now requires the additional purchase of a separate plug-in. In this talk we present alternatives based on open source libraries which allow the programmatic creation of 3D content in PDF format. While not providing the same level of access to CAD files as the commercial software, it does provide physicists with an alternative path to incorporate 3D content into PDF files from such disparate applications as detector geometries from Geant4, 3D data sets, mathematical surfaces or tessellated volumes.

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

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

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