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Subject: SVN commit of Geane code

Posted by [Andrea Fontana](#) on Wed, 18 Jul 2007 15:25:10 GMT

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Dear all,

we have just committed to the SVN repository the code that integrates the new GEANE interface and our code: this now contains new parametrizations for multiple scattering and straggling in energy loss and the option to extrapolate to the point of closest approach to a point or to a wire.

There are two packages which are already part of the repository:

- geane

this contains 2 classes, CbmGeane and CbmGeanePro: the first is used to initialize GEANE and the second to call the FORTRAN code.

Here you can find the standard GEANE options, "V", "L", "P", and the new method FindPCA (Point of Closest Approach) that extrapolates to the PCA: it is an extension of the option "L", where the function ERTRAK is called twice. The first time, with a very high length, to find the length to the PCA, the second time to extrapolate the track parameters to that length. This is done with a modification in the eustep.F function.

- trackbase

this contains the classes for helix (SC) and parabola (SD) track parametrization and the new class CbmGeaneUtil used for changing the track representation between SC/SD/SP/MARS. We have now corrected and checked the error matrices and the conversion of the errors from SC/SD to MARS and viceversa.

Everything seems to be working and we obtain the same results that we had with the old interface: on this respect there are two "minor" issues, as the phi pull seems a bit too broad (RMS 1.6) and there is a sistematic offset in the 1/p pull, due perhaps to the use of different range tables in geant and geane: these problems are now under study, but do not prevent to use GEANE for genfit.

We have concentrated so far onto the helix representation.

Similar work will follow shortly for the parabola.

To properly use the new features, it is necessary to update the following files:

in transport/geant3  
erdecks/eustep.F  
TGeant3/TGeant3.h  
TGeant3/TGeant3.cxx

which we have asked Rene Brun at Cern to update in the VMC cvs, and the files:

in pandaroot  
gconfig/Geane.C  
gconfig/g3Config.C

which we have asked Denis and Florian to do, if possible. The new geane and trackbase packages are not yet in the general CMakeLists.txt and Makefile so that they are not automatically compiled. We have switched to Cmake, but we will also maintain the old makefiles.

Finally we have started working on a tutorial in the case of the STT and we plan to put this in a new package named GeaneEx with documentation in the form of a PDF manual for the interface and a tutorial on the wiki. This will be ready for September.

We are available for assistance and discussion and we plan to give a short update just before the August holidays at the VRVS of August 1st.

Best regards and ciao,

Andrea, Pablo, Lia and Alberto

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