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Subject: Re: MC data productions

Posted by [Florian Uhlig](#) on Wed, 24 Oct 2007 10:00:30 GMT

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I looked into the problem with the cherenkov photons on 64bit machines. As reported in the Software Meeting on 18.10.07 with the newest version of TGeant3 the problem disappeared and the control spectra look normal (see [test.mc.RichTestSim.newgeant3.ps](#))

Checking the changes in the Geant3 code between the two versions there was only no change in the code which could explain the difference between the two Geant3 versions, but there was also a change in the Makefile for x86\_64. In the new Makefile there is a new compiler option "-fno-f2c".

Compiling the old Geant3 code with this additional option also for the old code the Rich control spectra look normal (see [test.mc.RichTestSim.oldgeant3.newflag.ps](#))

According to the information of the g77 manpage normally all code generated by g77 is compatible with code generated with f2c. using "-fno-f2c" the generated code is not compatible with code generated by f2c but uses the GNU calling conventions instead. This mainly effects the return values

>>The f2c calling conventions require functions that return  
>>type "REAL(KIND=1)" to actually return the C type "double",  
>>and functions that return type "COMPLEX" to return the  
>>values via an extra argument in the calling sequence that  
>>points to where to store the return value.

>>Under the GNU calling conventions, such functions simply  
>>return their results as they would in GNU C---"REAL(KIND=1)"  
>>functions return the C type "float", and "COMPLEX" functions  
>>return the GNU C type "complex" (or its "struct" equivalent).

>>Caution: If -fno-f2c is used when compiling any source file  
>>used in a program, it must be used when compiling all  
>>Fortran source files used in that program.

Since TGeant3 is mostly an interface from C++ to the old fortran routines this differences can explain the observed effect. Why this effect is only seen with cherenkov photons i don't know.

As a summary i would say the problem is solved and partly understood.

On [/misc/cbmsoft/Debian64/new](#) i will use the old Geant3 version with the new compiler flag, to have consistent versions of the different libraries on 32 and 64bit.

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## File Attachments

- 1) [test.mc.RichTestSim.oldgeant3.newflag.ps](#), downloaded 482 times
  - 2) [test.mc.RichTestSim.newgeant3.ps](#), downloaded 537 times
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