Contribution ID: **31**   Type: **oral presentation**

"Software kernels" - Can we gauge total application performance by inspecting the efficiency of compiled small (but important) software kernels?

Monday 13 February 2006 15:00 (20 minutes)

HEP programs commonly have very flat execution profiles, implying that the execution ime is spread over many routines/methods. Consequently, compiler optimization should be applied to the whole program and not just a few inner loops. In this talk I, nevertheless, discuss the value of extracting some of the most solicited routines (relatively speaking) and using them to gauge overall performance and potentially "critique"the code generated by the compiler(s). An initial set of ten C++ routines have been extracted from three HEP packages (ROOT, GEANT4 and CLHEP). One key advantage of this approach is that the selected routines compile and execute in seconds, allowing lots of testing of different platforms, compilers and compiler options. The speaker will review the initial selection and show results with GNU gcc and Intel icc on multiple hardware platforms.

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Session Classification: Software Tools and Information Systems

Track Classification: Software Tools and Information Systems