

Numerical Differences Observed Due to Different Binaries of LS-DYNA and Due to the Use of Various Compiler Options

**Guangye Li
Wei David Chen
Jeff Zais**

IBM

Abstract

This paper compares the numerical results generated with different versions of LS-DYNA, including SMP versions ls950d, ls950e, ls960 (all with single precision), SMP version ls960 with double precision, and the MPI version mpp960. The car crash simulation model used in this study is the Neon model generated by the National Crash Analysis Center. The plotted results include internal energies, sliding interface energies, displacements, velocities and accelerations. Most of the results were obtained on IBM AIX systems with POWER3-II and POWER4 processors. To show the effect of different floating point round off methods, results are compared between binaries generated from the exact same LS-DYNA source code, but compiled by using different compiler floating point options. Furthermore, the comparisons also included the numerical results from a Linux cluster based on the Intel Pentium III processor, using the LS-DYNA MPI version mpp960 binary compiled by using the Intel compiler.

