Standard Benchmarks and Performance Metrics for Multibody Dynamics Simulation Systems

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Common systems with important engineering applications are mathematically nonsmooth, and difficult to simulate accurately. Problem sizes, along with the demand for fast and accurate simulation continually increases under limited computational resources. There exist flaws in simulation platforms used in research and industry, which impact accuracy and performance. Concessions must be made to provide sufficient results in a reasonable time. Inaccuracies make the use of dynamic simulation for crucial scientific and engineering tasks difficult to accomplish.

We plan to discuss the lack of tools for comparing different simulation platforms for accuracy, or suitability for particular applications. Currently no internationally recognized standard of benchmarking for multibody dynamics simulation software exists, a problem frequently cited by the European Space Agency and many other organizations. Having accurate data for fair comparisons available for the performance of software helps engineers and researchers choose the appropriate tool for their application.