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Fast integration of satellite movement with CUDA_based software

Vasyl Choliy (1,2) and Volodymyr Taradiy (2)

(1) Kiev Schevchenko University, Physics and Astronomy, Kiev, Ukraine (charlie@mail.univ.kiev.ua, +380 44 5264507), (2) International Centre of Astronomical, Medical and Ecological Investigations, Kiev, Ukraine (tkitar@mail.ru)

Modelling of satellite movement for geodynamics purpuses uses integration of ordinal differential equations routines.
Our integration routine (VASOMI = VAriable Step and Order Method of Integration) for Adams method was re-designed to be able to work on massively parallel machines with CUDA. CUDA is acronym for Computer Unified Device Architecture from NVidia (r), which allow usage of graphical cards as a co-processors.
It speeds up the integrating of the satellites equation in 20 - 60 times depending on the equations right sides.
We report our methodology of the parallelization and comparison results of three VASOMI versions: original (Fortran), ported to C, and parallel for CUDA.