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Stpiczyński, Przemysław

Semiautomatic acceleration of sparse matrix-vector product using openacc.

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Summary: The aim of this paper is to show that well known SPARSKIT SpMV routines for *Ellpack-Itpack* and *Jagged Diagonal* formats can be easily and successfully adapted to a hybrid GPU-accelerated computer environment using OpenACC. We formulate general guidelines for simple steps that should be done to transform source codes with irregular data access into efficient OpenACC programs. We also advise how to improve the performance of such programs by tuning data structures to utilize hardware properties of GPUs. Numerical experiments show that our accelerated versions of SPARSKIT SpMV routines achieve the performance comparable with the performance of the corresponding CUSPARSE routines optimized by NVIDIA.

Keywords: sparse matrices; spmv; gpus; openacc; cusparse
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