عنوان فارسی مقاله:
عملگرهای جبری خطی برای اجرای الگوریتم های عددی توسط GPU

عنوان انگلیسی مقاله:
Linear Algebra Operators for GPU Implementation of Numerical Algorithms

توجه!
این فایل تنها قسمتی از ترجمه می‌باشد. برای تهیه مقاله ترجمه شده کامل با فرمت ورد (قابل ویرایش) همراه با نسخه انگلیسی مقاله، اینجا کلیک کنید.
7 Conclusion

In this work, we have described a general framework for the implementation of numerical simulation techniques on graphics hardware. For this purpose, we have developed efficient internal layouts for vectors and matrices. By considering matrices as a set of diagonal or column vectors and by representing vectors as 2D texture maps, matrix-vector and vector-vector operations could be accelerated considerably compared to software based approaches.

Our emphasis was on providing the building blocks for the design of general techniques of numerical computing. This is in contrast to existing approaches, where dedicated, mainly explicit solution methods have been proposed. In this respect, for the simulation of particular phenomena some of these approaches might be superior to ours in terms of performance. On the other hand, our framework offers the flexibility to implement arbitrary explicit or implicit schemes, and it can thus be used in applications where larger step sizes and stability are of particular interest. Furthermore, because our internal matrix layout can benefit from the sparsity of columns quite effectively, we do not expect our method to be significantly slower compared to customized explicit schemes.