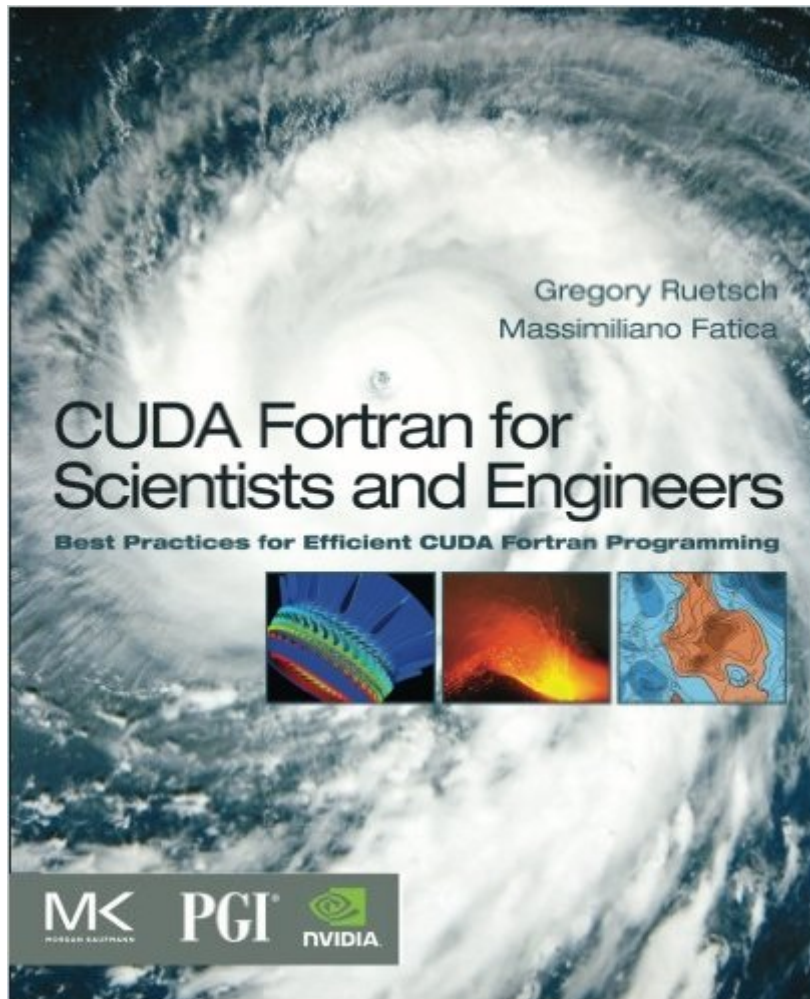


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# CUDA Fortran For Scientists And Engineers: Best Practices For Efficient CUDA Fortran Programming



## Synopsis

CUDA Fortran for Scientists and Engineers shows how high-performance application developers can leverage the power of GPUs using Fortran, the familiar language of scientific computing and supercomputer performance benchmarking. The authors presume no prior parallel computing experience, and cover the basics along with best practices for efficient GPU computing using CUDA Fortran. To help you add CUDA Fortran to existing Fortran codes, the book explains how to understand the target GPU architecture, identify computationally intensive parts of the code, and modify the code to manage the data and parallelism and optimize performance. All of this is done in Fortran, without having to rewrite in another language. Each concept is illustrated with actual examples so you can immediately evaluate the performance of your code in comparison. Leverage the power of GPU computing with PGI's CUDA Fortran compiler. Gain insights from members of the CUDA Fortran language development team. Includes multi-GPU programming in CUDA Fortran, covering both peer-to-peer and message passing interface (MPI) approaches. Includes full source code for all the examples and several case studies. Download source code and slides from the book's companion website.

## Book Information

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## Customer Reviews

I have a few thousand hours of experience working with CUDA Fortran and can say that this book is perfect for the advance and beginner CUDA Fortran programmers alike. The concepts are laid out succinctly and clearly. The book includes codes written for tests and performance feedback related

to each topic with detailed discussion that will be very helpful for learning CUDA Fortran and fully understanding the CUDA GPU architectures. The book is helpful also in that it includes methods for using CUDA cards up through the Tesla K20. This was important for me as the Tesla K20 has, up until the past couple of months, had poor literature describing best practices and how to take advantage of the card's capabilities. The biggest offering this book brings to the table is that you won't have to waste time searching around online trying to find half-baked information in forums and/or papers. I also recommend "The CUDA Handbook" as another resource to understand programming with GPUs.

I utilized this book for my first explicit FEM code with cuda fortran(Tesla K20c). With easy-to-understand descriptions, I could understand many concepts in detail. The important thing is I have been able to write cuda fortran code and accelerate my original sequential CPU code. I hope more and more practical topics such as how to accelerate Conjugate Gradient method used in the various numerical simulator would be covered in the next revision of this book!! I love this book! Great thanks to the author!

Very good book!

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