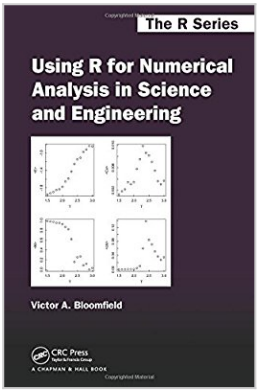

Using R for Numerical Analysis in Science and Engineering (Chapman & Hall/CRC The R Series)

By Victor A. Bloomfield

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Instead of presenting the standard theoretical treatments that underlie the various numerical methods used by scientists and engineers, **Using R for Numerical Analysis in Science and Engineering** shows how to use R and its add-on packages to obtain numerical solutions to the complex mathematical problems commonly faced by scientists and engineers. This practical guide to the capabilities of R demonstrates Monte Carlo, stochastic, deterministic, and other numerical methods through an abundance of worked examples and code, covering the solution of systems of linear algebraic equations and nonlinear equations as well as ordinary differential equations and partial differential equations. It not only shows how to use R's powerful graphic tools to construct the types of plots most useful in scientific and engineering work, but also:

- Explains how to statistically analyze and fit data to linear and nonlinear models
- Explores numerical differentiation, integration, and optimization
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Using R for Numerical Analysis in Science and Engineering provides a solid introduction to the most useful numerical methods for scientific and engineering data analysis using R.

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Review

"… the book is well organized, clearly written, and has a large amount of useful R code. It does a good job of answering the question of how to use R to perform numerical analyses of interest to scientists and engineers and, as such, can be recommended to the intended audience."
?*Journal of the Royal Statistical Society*, Series A, 2015

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?*The American Statistician*, February 2015

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?Andrey Kostenko, *Teaching Statistics*

About the Author

Victor A. Bloomfield is currently emeritus professor at University of Minnesota, Minneapolis, USA. His research has encompassed more than four decades and a variety of topics, including enzyme kinetics, dynamic laser light scattering, bacteriophage assembly, DNA condensation, scanning tunneling microscopy, and single molecule stretching experiments on DNA. His theoretical work on biopolymer hydrodynamics and polyelectrolyte behavior has resulted in over 200 peer-reviewed journal publications. *Using R for Numerical Analysis in Science and Engineering* is an extension and broadening of his 2009 book, *Computer Simulation and Data Analysis in Molecular Biology and Biophysics: An Introduction Using R*, for general usage in science and engineering.

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