Data Analysis for Physical Scientists: Featuring Excel, 2nd ed. by Les Kirkup, Cambridge University Press (2012), ISBN 978-0-521-88372-6, price $75.00.

I have traditionally avoided Microsoft Excel like the plague when analysing data, preferring what I would consider to be more appropriate tools such as STATA, Sigmaplot, Origin or Matlab. While the title of the second edition of "Data Analysis for Physical Scientists: Featuring Excel" by Les Kirkup has been changed slightly to de-emphasise the role of Excel, I still approached this book with some trepidation. I came away pleasantly surprised and with a greater openness to the use of Excel for scientific data analysis.

This book is aimed at undergraduate students and provides an excellent introduction to scientific data analysis, distributions, measurement uncertainty, linear and non-linear least squares and tests of significance. The book has a attractive uncluttered layout, with numerous examples, exercises and problems. The author not only provides a clear introduction to the principles of data analysis, but also shows how to apply them and illustrates many of the examples with the aid of Excel 2010 built-in functions and features. This allows the reader to independently explore the material further, which in my experience makes learning more interesting and leads to a quicker grasp of the fundamentals. I particularly appreciated the footnotes which are used to elaborate certain points in the text while still keeping the material flowing briskly.

The Introductory chapter on data analysis is followed by an obligatory chapter entitled "Introduction to Excel" which many readers may feel to be redundant particularly if they have already used Excel. In spite of having used Excel, arguably somewhat superficially, for many years, I found this chapter a useful refresher that included a number of (for me) hidden gems. The chapter on measurement, error and uncertainty continues the good use of examples to lead the reader through the process of measurement, the difference between precision and accuracy, types of errors and uncertainties. I was pleased to see some discussion on dealing with outliers, although here I would have appreciated seeing some additional references provided for the reader who wished to explore this area in greater detail.

The author also does an admirable job of introducing least square fitting. In addition to covering the material found in most introductory texts he also covers two areas that I find students are particularly weak in; estimating the uncertainties in the parameters and methods for comparing the equations being used to fit data. The penultimate chapter covers tests of significance and analysis of variance before the final chapter introduces the data analysis tools in Excel and the Analysis ToolPak which enable ANOVA and further analysis and testing to be explored.

While neither this book, nor Excel is likely to replace my other books or software as data analysis tools, I would highly recommend this book for undergraduate physics students and I will certainly be asking my graduate students to read it prior to starting their research.

Stephen Pistorius, Ph.D., P. Phys.
Professor, Department of Physics and Astronomy, University of Manitoba, Winnipeg.