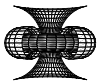
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BOOK REVIEW

Computer Algebra Recipes for Mathematical Physics, by Richard H. Enns, Birkhäuser, Boston·Basel·Berlin, 2005, xiv + 390 pp + 106 illustrations and CD-ROM included, 72.76€, ISBN: 0-8176-3223-9

This book is designated for those readers wanting to use Maple 9.5 features to solve problems related to the mathematical physics. The text is intended to be self-contained as much as can be such and to serve as a textbook, or even as a reference. The author idea is to guide the reader through some classical problems and to explain the basic Maple commands in "runtime" mode. The material consist of 230 worksheets organized around groups of specific problems in the Mathematical Physics. Each of these problems (called recipes) is briefly presented in the text and implemented using Maple capabilities. Many additional exercises are included at the end of each section. All solutions of the discussed problems and the supplementary examples are available also on the included CD-ROM.

The text is divided in three *Parts*, each containing a few chapters grouped around concrete mathematical problems. The text follows the complexity of the recipes. In general the complexity of the physical problems coincides with the Maple need-to-know level, but it is obvious that the book could be used for a educational course as well.

The first part called *Appetizers* which is in fact an introduction, covers problems related to the linear Ordinary Differential Equations(ODEs), Taylor and Fourier series and their applications to ODEs solving and some linear algebra basics. As it is common for such kind of textbooks at the beginning of each section there are some theoretic explanations regarding the mathematical background. This introduction is used also to provide and train all the "must to know" Maple rules. All commands and options that are frequently used in this "language" are well presented and exploited. It is important to mention that most of the recipes in this sections could be directly solved from the build-in Maple functions.

The second part – *Entrees* contains examples concerning solving linear Partial Differential Equations (PDEs), complex variables, scalar and vector fields, varia-

tional calculus and integral transforms. Respectively the operations becomes more profound and requires a good practice in Maple. This part contains the main text of the book and gives to the reader very good base of Maple knowledge. In fact the information provided here is just enough to one wanting to have good "culture" of Maple engine without entering deeply inside big details and complicated tasks.

The last *Part* of the book is focused on some advanced mathematical problems. It consists of two chapters of which the first being one on the Nonlinear Ordinary and Partial Differential Equations. The second chapter of this part, and the last in the book, goes into one of the most important problems of the computational mathematics – the numeric methods.

The book covers a very wide range of methods aimed to make a heavy use of Maple machinery in solving various problems in physics. The recipes are well selected to match the reader's actual knowledge of Maple and develop her/his understanding. One has to mention also the inclusion of a lot of stories which are not directly related to the problems discussed after that but they provide a stage and provoke some thoughts.

On formal level, the Maple commands are explained well and methodologically. The author has tried to put some mathematical explanations at the beginning of each chapter but for the real understanding of the text a solid physical and mathematical background is needed.

As whole, this text is strongly recommended to be read along with the recipes in front of a PC and wish to practice each step. The eventual reward will be that one will be able to solve some new and an interesting problem.

Elena R. Popova
Bulgarian Academy of Sciences
E–mail address: elena.popova@webgate.bg