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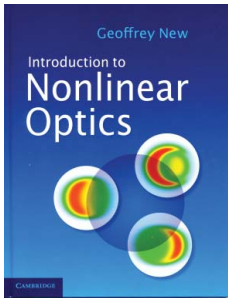
book reviews

Works intended for this column should be sent direct to the Book-Review Editor, whose address appears in this issue. All reviews are also available from **Crystallography Journals Online**, supplemented where possible with direct links to the publisher's information.

books received

The following books have been received by the Editor. Uncritical notices are given under this heading instead of reviews in order to facilitate rapid communication.



Introduction to Nonlinear Optics. By Geoffrey New. Pp. xv+257. Cambridge: University Press, 2011. Price (hardcover) GBP 45.00, USD 75.00. ISBN-9780521877015.

After basic ideas have been outlined, the book offers a thorough analysis of second harmonic generation and related second-order processes, before moving on to third-order effects, the nonlinear optics of short optical pulses and coherent effects such as electromagnetically induced transparency. A simplified treatment of high harmonic generation is presented at the end. More advanced topics, such as the linear and nonlinear optics of crystals, the tensor nature of the nonlinear coefficients, and their quantum mechanical representation, are confined to specialist chapters so that the readers can focus on basic principles before tackling these more difficult aspects of the subject. The book is divided into ten chapters as follows: 1, Introduction; 2, Frequency Mixing; 3, Crystal Optics; 4, Nonlinear Optics in Crystals; 5, Third-Order Nonlinear Processes; 6, Dispersion and Optical Pulses; 7, Nonlinear Optics with Pulses; 8, Some Quantum Mechanics; 9, Resonant Effects; 10, High Harmonic Generation. Appendices follow: A, Conventions and Units; B, Linear and Nonlinear Susceptibilities in the Time and Frequency Domains; C, Definition of the Nonlinear Coefficients; D, Non-Zero d Elements in Non-centrosymmetric Crystals; E, Real Fields, Complex Fields, and the Analytical Signal; F, Geometry of the Grating Pair; G, The Paraxial Wave Equation; H, Useful Formulae for Numerical Simulations; I, Useful Constants. Answers to Problems; Further Reading; References; Index. It is the first textbook in a fast developing area at the level of undergraduates and beginning PhD students.