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Nota di contenuto	Cover; Title Page; Copyright; Preface; Contents; List of Figures; Chapter 1: From Optics to Photonics; 1.1 The Charm and Challenge of Photonics; 1.2 The Nature of Optical Nonlinearity; 1.3 Overcoming the Materials Bottleneck; 1.4 The Expanding Frontiers; 1.5 Explorations; Chapter 2: A Phenomenological View of Nonlinear Optics; 2.1 Optics in the Nonlinear World; 2.1.1 Introduction; 2.1.2 First Order Susceptibility; 2.1.3 Second Order Susceptibility; 2.1.4 Third Order Susceptibility; 2.2 Time Domain Response; 2.2.1 First Order Polarization- Time Domain Response 2.2.2 Higher Order Polarizations - Time Domain Response 2.3 Frequency Domain Response; 2.3.1 First Order Susceptibility; 2.3.2 Second Order Susceptibility; 2.3.3 General Order (n) Susceptibility; 2.4 The nth order Polarization; 2.5 Monochromatic Waves; 2.6 Calculation of the Factor K; 2.6.1 Optical Rectification; 2.6.2 Second Harmonic Generation; 2.6.3 Pockels Effect; 2.6.4 Sum and Difference Frequency generation; 2.6.5 Third Harmonic Generation; 2.6.6 Nondegenerate Four Wave Mixing; 2.7 Explorations; Chapter 3: Symmetry and Susceptibility Tensors; 3.1 Introduction

3.2 Crystal Symmetry and Susceptibility Tensors 3.2.1 Neumann Principle; 3.2.2 Symmetry of Second Order Susceptibility; 3.2.3 Second Harmonic Generation; 3.2.4 Kleinman Symmetry; 3.2.5 Symmetry of Third Order Susceptibility; 3.3 The Dielectric Permittivity Tensor; 3.4 The Refractive Index Ellipsoid; 3.5 Explorations; Chapter 4: Calculation of Non-linear Susceptibilities; 4.1 Introduction; 4.1.1 Physical Quantities in Quantum Physics; 4.1.2 The Projection Operator; 4.2 The Equation of Motion; 4.3 Ensembles of Particles; 4.4 Time-dependent Perturbation; 4.5 Dipolar Interaction  
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6.1.6 Applications of Phase Conjugation

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Sommario/riassunto

Current literature on Nonlinear Optics varies widely in terms of content, style, and coverage of specific topics, relative emphasis of areas and the depth of treatment. While most of these books are excellent resources for the researchers, there is a strong need for books appropriate for presenting the subject at the undergraduate or postgraduate levels in Universities. The need for such a book to serve as a textbook at the level of the bachelors and masters courses was felt by the authors while teaching courses on nonlinear optics to students of both science and engineering during the past tw

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