

Lectures On Ultrafast Intense Laser Science 1

[DOWNLOAD HERE](#)

1;Lectures on Ultrafast Intense Laser Science 1;3 1.1;Preface;5 1.2;Contents;7 1.3;Contributors;13
1.4;Chapter 1 Introduction to Atomic Dynamics in Intense Light Fields;14 1.4.1;1.1 Introduction;14
1.4.2;1.2 Historical Background;15 1.4.3;1.3 Virtual Absorption;18 1.4.4;1.4 Generalized Fermi Golden
Rule;19 1.4.5;1.5 In Law;19 1.4.6;1.6 Above-Threshold Ionization;21 1.4.7;1.7 The Volkov State and
KFR-Theory;24 1.4.8;1.8 High Harmonic Generation;29 1.4.9;1.9 Why Only Odd Harmonics?;29
1.4.10;1.10 Tests for the KFR-Model via the Floquet Theoryand Experiments;30 1.4.11;1.11
Many-Electron Atomic Systems in Intense Light Fields;33 1.4.12;1.12 Intense-Field Processes in
Many-Body Systems;35 1.4.13;1.13 Correlations: Static and Dynamic;35 1.4.14;1.14 Intense-Field
Many-Body S-Matrix Theory;36 1.4.15;1.15 Nonsequential Double Ionization;39 1.4.16;1.16 The CES'
Diagram and Mechanism' of Double Ionization;42 1.4.17;1.17 Comments on Sum-Momentum
Distributions;47 1.4.18;1.18 Comments on Multiple Ionization;49 1.4.19;References;52 1.5;Chapter 2
Foundations of Strong-Field Physics;54 1.5.1;2.1 Introduction;54 1.5.2;2.2 Special Features of
Strong-Field Problems;55 1.5.3;2.3 General Quantum Transition Amplitude;58 1.5.3.1;2.3.1
Preliminaries;58 1.5.3.2;2.3.2 History of the S-Matrix;59 1.5.3.3;2.3.3 Derivation of the Transition
Amplitude;60 1.5.4;2.4 Gauge Transformations;62 1.5.4.1;2.4.1 A Partial List of Gauge-Related
Mistakes;67 1.5.4.2;2.4.2 Does a Laboratory Gauge Exist?;68 1.5.5;2.5 SFA (Strong-Field
Approximation);70 1.5.5.1;2.5.1 SFA Rates;71 1.5.5.2;2.5.2 SFA Spectra;73 1.5.5.3;2.5.3 SFA
Momentum Distributions;76 1.5.6;2.6 Tunneling/Multiphoton Misconception;82 1.5.6.1;2.6.1 Tunneling
and the Keldysh Parameter;84 1.5.7;2.7 Time Domains and Rescattering;86 1.5.8;2.8 Relativistic
Effects;91 1.5.9;References;96 1.6;Chapter 3 High Intensity Physics Scaled to Mid-Infrared
Wavelengths;98 1.6.1;3.1 Introduction;98 1.6.2;3.2 Mid-Infrared Sources at OSU;99 1.6.3;3.3 MIR Strong
Field Ionization;100 1.6.3.1;3.3.1 Keldysh Parameter;100 1.6.3.2;3.3.2 Keldysh Scaling;103 1.6.3.3;3.3.3
Strong Field Ionization Photoelectron Energy Spectra;103 1.6.3.4;3.3.4 Wavelength Scaling of the
Photoelectron Spectra;105 1.6.3.5;3.3.5 Wavelength Scaling of the Ionization Rate: TDSE vs. Tunneling
Theory;107 1.6.3.6;3.3.6 Intensity Scaling of the Rescattering Plateau;107 1.6.3.7;3.3.7 Wavelength

Scaling of the Rescattering Plateau;109 1.6.3.8;3.3.8 Ionization of Scaled Systems;109 1.6.3.9;3.3.9 The Low Energy Structure in the Photoelectron Energy Spectra;111 1.6.4;3.4 MIR High Harmonics and Atto-physics;111 1.6.4.1;3.4.1 Scaling of the Harmonic Cutoff;113 1.6.4.2;3.4.2 Scaling of the Group Delay Dispersion;113 1.6.4.3;3.4.3 Scaling of the Harmonic Yield;118 1.6.5;3.5 Tomographic Reconstruction of Molecular Orbitals;119 1.6.6;References;121 1.7;Chapter 4 How Do Molecules Behave in Intense Laser Fields? Theoretical Aspects;123 1.7.1;4.1 Introduction;123 1.7.2;4.2 Electronic and Vibrational Dynamics of H₂+ in a Near-IR Field;124 1.7.3;4.3 Time-Dependent Adiabatic State Approach and Its Application to Large Amplitude Vibrational Motion of C₆₀ Induced by Near-IR Fields;127 1.7.4;4.4 Bond Dissociation Dynamics of Ethanol: Branching Ratio of C-C and C-O Dissociation;142 1.7.5;References;145 1.8;Chapter 5 Pulse Shaping of Femtosecond Laser Pulses and Its Application of Molecule Control;147 1.8.1;5.1 Introduction;147 1.8.2;5.2 Femtosecond Laser Pulse Shaping with a 4f Pulse Shaper;148 1.8.3;5.3 Spatiotemporal Coupling at 4f Pulse Shapers;157 1.8.4;5.4 Replica Pulse Formation with a PixelatedSLM Pulse Shaper;161 1.8.5;5.5 Femtosecond Laser Pulse Shaping with an AOPDF;165 1.8.6;5.6 How to Generate the Desired Ultrashort Laser Pulse in an Actual Laser System: Case 1: We Know the Desired Pulse Shape;167 1.8.7;5.7 How to Generate the Desired Ultrashort Laser Pulse in an Actual Laser System: Case 2: We Do EAN/ISBN : 9783540959441 Publisher(s): Springer, Berlin Format: ePub/PDF Author(s): Yamanouchi, Kaoru

[DOWNLOAD HERE](#)

Similar manuals:

[Lectures On Ultrafast Intense Laser Science 1](#)