

C O N T E N T S

I N V I T E D L E C T U R E S

Part I: Multiphoton Ionization

- P. Lambropoulos, A. Lyras and X. Tang:
Resonance Multiphoton Ionization Under Strong Fields 3
- R.R. Freeman, W.E. Cooke, L.D. van Woerkom and
T.J. McIlrath:
On the Problem of the "New" Structure in Multiphoton
Ionization Introduced by Short-Pulse High Intensity
Lasers 15
- H. Rottke, B. Wolff, M. Tapernon, D. Feldmann and
K.H. Welge:
Resonant Multiphoton Ionization of Xenon and Atomic
Hydrogen in Intense Sub-Ps-Laser Pulses 25
- M. Crance:
Multiphoton Detachment from Negative Ions 37
- R.M. Potvliege and R. Shakeshaft:
Multiphoton Processes in Intense Laser Fields 49

Part II: Atoms in Intense Laser Fields

- L.-A. Lompré, A. L'Huillier and G. Mainfray:
Harmonic Generation in Rare Gases at High Laser
Intensity 67

S.L. Chin and W. Xiong: Ionization of Atoms by an Intense CO ₂ Laser	80
A. McPherson, T.S. Luk, G. Gibson, J.C. Solem, K. Boyer and C.K. Rhodes: Studies of Strong-Field Effects in Multiphoton Sub- picosecond Excited Plasmas: Soft X-Ray Fluorescence and Propagation	93

Part III: Electron Correlations in Radiative Processes

G. Wendin and L. Jönsson: Theoretical Aspects of Multiphoton Ionization and Harmonic Generation	107
M. Aymar: Eigenchannel R-Matrix Calculation of Photoionisation Processes in Strontium	119
W. Sandner: Resonant Multiphoton Excitation of Autoionizing Ryd- berg States and Planetary Atoms	134
W.E. Cooke, J.G. Story and X. Wang: Electron Correlations in Time and Space	149
H. Klar: Correlations in Multiply Excited Atoms	159

Part IV: Rydberg Atoms in External Fields

M.V. Fedorov: Strong Field Coherence Effects in the Processes of Photoionization from Rydberg Levels	177
--	-----

A. ten Wolde, L.D. Noordam, H.G. Muller and H.B. van Linden van den Heuvell: Observation of Electronic Wave Packets with Short Laser Pulses	194
J.E. Bayfield: Many Photon Absorption in a Near-Classical Regime	208
R. Blümel, R. Graham, L. Sirko, U. Smilansky, H. Walther and K. Yamada: Localization Properties of Rydberg Atoms in the Presence of Noisy Microwave Fields	218
A. Holle, J. Main, G. Wiebusch, H. Rottke and K.H. Welge: Diamagnetism of the Hydrogen Atom in the Quasi- Landau-Regime	230

Part V: Other Laser Interactions

M. Gavrilu, M. Pont and J. van de Ree: Atomic Interactions in Superintense, High-Frequency Laser Fields	245
H. Helm, L.J. Lembo, P.C. Cosby and D.L. Huestis: Photoionization and Dissociation of the Triatomic Hydrogen Molecule	264

C O N T R I B U T E D P A P E R S
(ABSTRACTS)

G. Petite, P. Agostini, H.G. Muller and A. Migus: Multiphoton Ionisation of Xenon with Tunable Sub- picosecond Laser Pulses	281
---	-----

B. Piraux and P.L. Knight: Role of Counter–Rotating Wave Dynamics in Near– Threshold Photoionisation of Atomic Hydrogen	283
S. Basile, E. Fiordilino and F. Trombetta: Laser–Assisted Electron–Ion Recombination and High– Frequency Generation	285
S. Bivona, R. Burlon, G. Ferrante and C. Leone: Multiphoton Ionization of Hydrogen Induced by Two Strong Laser Fields	287
Gy. Farkas and Cs. Tóth: Energy Spectrum of Photoelectrons Produced by Pico– second Laser Induced Surface Multiphoton Photoeffect	289
S. Varró: Hydrogen Atom in a Strong Radiation Field: Nonperturbative Analytic Solutions	293
G. Alber: Laser Excitation of Stark–Induced Resonances	295
M.G.J. Fink and W.R. Johnson: Two–Photon Ionisation of Rare–Gas Atoms: An Application of the Relativistic Time–Dependent Dirac–Fock Theory	297
L. Jönsson and G. Wendin: Diagrammatic Perturbation Theory for a Two–Level System in an Intense Light Pulse	299
B. L. Christensen–Dalsgaard: Microwave Ionization of Alkali Rydberg Atoms	301
M. Poirier: Autoionization of Large–l Rydberg States	303
C. Hillermeier and R. Blümel: Fractallike Structures and the Strongly Kicked H–Atom	305

V. Véniard, P. Martin, A. Maquet, P. Francken and C.J. Joachain: (e,2e) Collisions in the Presence of a Laser Field	307
M. Pont and M. Gavrila: Atomic Deformation and AC–Stark Shifts of H Under Extreme Radiation Conditions	309
Xin He, O. Atabek, A. Giusti–Suzor and F. Mies: Collisional Treatment of Multiphoton Dissociation of Small Molecules in Strong Laser Fields	311
N. Bjerre, S.R. Keiding, L.J. Lembo and H. Helm: Autoionization of Rydberg States in H ₂ Induced by a Doubly Excited State	313
T. Baumert, B. Bühler and G. Gerber: Autoionization and Fragmentation of Na ₂ Studied by Femtosecond Laser Pulses	315
<u>List of Participants</u>	317