Physik

Tobias Rybka

Attosecond Electron Transport in Plasmonic Nanostructures

Shaker Verlag

Berichte aus der Physik

Tobias Rybka

Attosecond Electron Transport in Plasmonic Nanostructures

Shaker Verlag
Aachen 2019

Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet at http://dnb.d-nb.de.

Zugl.: Konstanz, Univ., Diss., 2018

Printed in Germany.

ISBN 978-3-8440-6398-1
ISSN 0945-0963

Shaker Verlag GmbH • P.O. BOX 101818 • D-52018 Aachen
Phone: 0049/2407/9596-0 • Telefax: 0049/2407/9596-9
Internet: www.shaker.de • e-mail: info@shaker.de

Attosecond Electron Transport in Plasmonic Nanostructures

Doctoral thesis for obtaining the

academic degree Doctor of Natural Sciences

(Doctor rerum naturalium)

submitted by

Tobias Rybka

at the

Universität Konstanz

Faculty of Sciences

Department of Physics

Konstanz, 2018

Date of the oral examination: Mai 11, 2018

1. Reviewer: Prof. Dr. Alfred Leitenstorfer

2. Reviewer: Prof. Dr. Daniele Brida

Contents

OPA optical parametric amplifier

BEM boundary element method

ATP above-threshold photoemission

ATI above-threshold ionization

RSD relative standard deviation

FN Fowler-Nordheim

2DSI two-dimensional spectral shearing interferometry

SMU source meter unit

AFM atomic force microscope

SEM scanning electron microscope

EBL electron-beam lithography

RMS root-mean-square

BBO beta barium borate

TBP time-bandwidth product

CEP carrier-envelope phase

CEO carrier-envelope offset

SAM semiconductor saturable absorber mirror

GDD group delay dispersion

GVD group velocity dispersion

SPM self-phase modulation

XPM cross-phase modulation

FWM four-wave mixing

PPLN periodically poled lithium niobate

SRS stimulated raman scattering

DFG difference frequency generation

NLSE nonlinear Schroedinger equation

ZDW zero-dispersion wavelength

WDM wavelength-division multiplexing

EDF erbium doped fiber

EDFA erbium-doped fiber amplifier

MFA mode field area

MFD mode field diameter

HNF highly nonlinear bulk silica fiber

PCF photonic crystal fiber

PM polarization-maintaining

NPE nonlinear polarization evolution

NALM nonlinear amplifying loop mirror

FWHM full-width at half-maximum

FROG frequency-resolved optical gating

IMFP inelastic mean free path

EMFP elastic mean free path

I-V current-voltage