



Universiteit
Leiden
The Netherlands

Two-dimensional optics : diffraction and dispersion of surface plasmons

Chimento, P.F.

Citation

Chimento, P. F. (2013, May 22). *Two-dimensional optics : diffraction and dispersion of surface plasmons*. Retrieved from <https://hdl.handle.net/1887/20901>

Version: Not Applicable (or Unknown)

License: [Leiden University Non-exclusive license](#)

Downloaded from: <https://hdl.handle.net/1887/20901>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/20901> holds various files of this Leiden University dissertation.

Author: Chimento, Philip

Title: Two-dimensional optics : diffraction and dispersion of surface plasmons

Issue Date: 2013-05-22

PHILIP F. CHIMENTO

TWO-DIMENSIONAL OPTICS

DIFFRACTION AND DISPERSION
OF SURFACE PLASMONS

Copyright © 2013 Philip F. Chimento

Published by Casimir Research School, Delft, The Netherlands

Cover design: Philip F. Chimento

Printed by Gildeprint Drukkerijen, The Netherlands

ISBN: 978-90-8593-155-3

TWO-DIMENSIONAL OPTICS

DIFFRACTION AND DISPERSION OF SURFACE PLASMONS

Proefschrift

ter verkrijging van
de graad van Doctor aan de Universiteit Leiden
op gezag van Rector Magnificus prof.mr. C.J.J.M. Stolker,
volgens besluit van het College voor Promoties
te verdedigen op woensdag 22 mei 2013
klokke 11:15 uur

door

Philip Chimento
geboren te Raleigh, North Carolina, Verenigde Staten
in 1981

PROMOTIECOMMISSIE

Promotores:	Prof. dr. E. R. Eiel	Universiteit Leiden
	Prof. dr. G. W. 't Hooft	Philips Research & Universiteit Leiden
Leden:	Dr. M. P. van Exter	Universiteit Leiden
	Dr. C. Genet	Université de Strasbourg
	Prof. dr. J. Gómez Rivas	Philips Research & TU Eindhoven
	Dr. H. L. Offerhaus	Universiteit Twente
	Prof. dr. T. D. Visser	Vrije Universiteit & TU Delft
	Prof. dr. J. P. Woerdman	Universiteit Leiden

This work is part of the research program of the Foundation for Fundamental Research on Matter (FOM), which is part of the Netherlands Organization for Scientific Research (NWO).

An electronic version of this dissertation is available at the Leiden University Repository (<https://openaccess.leidenuniv.nl>).

Casimir PhD series, Delft-Leiden, 2013-14

*To caffeine
To the future, let's hope it's worth saving*

Contents

<i>Introduction for non-scientists</i>	1
1 <i>Introduction</i>	9
PART I DEVICES USING SUBWAVELENGTH SLITS IN METAL LAYERS	
2 <i>A subwavelength slit as a quarter-wave retarder</i>	15
3 <i>Spin-to-orbital angular momentum conversion in a subwavelength slit</i>	31
4 <i>Plasmonic optical vortex tomography</i>	43
PART II ANOMALOUS SURFACE PLASMON DISPERSION IN ALUMINUM	
5 <i>Surface plasmon coupling by attenuated total reflection for Drude-like metals</i>	53
6 <i>Anomalous dispersion of surface plasmons</i>	73
7 <i>Enhancing the anomalous surface plasmon dispersion in aluminum</i>	83
<i>Bibliography</i>	97
<i>Samenvatting</i>	109
<i>Curriculum Vitæ</i>	113
<i>List of Publications</i>	115
<i>Acknowledgements</i>	117

