PROCEEDINGS OF SPIE

SPIDigitalLibrary.org/conference-proceedings-of-spie

Front Matter: Volume 11470

, "Front Matter: Volume 11470," Proc. SPIE 11470, Spintronics XIII, 1147001
(16 September 2020); doi: 10.1117/12.2581622

SPIE.

Event: SPIE Nanoscience + Engineering, 2020, Online Only

PROCEEDINGS OF SPIE

Spintronics XIII

Henri-Jean M. Drouhin

Jean-Eric Wegrowe

Manijeh Razeghi

Henri Jaffrès

Editors

24 August – 4 September 2020

Online Only, United States

Sponsored and Published by
SPIE

Volume 11470

Proceedings of SPIE 0277-786X, V. 11470

SPIE is an international society advancing an interdisciplinary approach to the science and application of light.

Spintronics XIII, edited by Henri-Jean M. Drouhin, Jean-Eric Wegrowe, Manijeh Razeghi,
Henri Jaffrès, Proc. of SPIE Vol. 11470, 1147001 · © 2020 SPIE
CCC code: 0277-786X/20/\$21 · doi: 10.1117/12.2581622

Proc. of SPIE Vol. 11470 1147001-1

The papers in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. Additional papers and presentation recordings may be available online in the SPIE Digital Library at SPIEDigitalLibrary.org.

The papers reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from these proceedings:

Author(s), "Title of Paper," in *Spintronics XIII*, edited by Henri-Jean M. Drouhin, Jean-Eric Wegrowe, Manijeh Razeghi, Henri Jaffrès. Proceedings of SPIE Vol. 11470 (SPIE, Bellingham, WA, 2020) Seven-digit Article CID Number.

ISSN: 0277-786X

ISSN: 1996-756X (electronic)

ISBN: 9781510637467

ISBN: 9781510637474 (electronic)

Published by

SPIE

P.O. Box 10, Bellingham, Washington 98227-0010 USA

Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445

SPIE.org

Copyright © 2020, Society of Photo-Optical Instrumentation Engineers.

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is \$21.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/20/\$21.00.

Printed in the United States of America by Curran Associates, Inc., under license from SPIE.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIE. DIGITAL LIBRARY

SPIEDigitalLibrary.org

Paper Numbering: *Proceedings of SPIE* follow an e-First publication model. A unique citation identifier (CID) number is assigned to each article at the time of publication. Utilization of CIDs allows articles to be fully citable as soon as they are published online, and connects the same identifier to all online and print versions of the publication. SPIE uses a seven-digit CID article numbering system structured as follows:

- The first five digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 0Z, followed by 10-1Z, 20-2Z, etc. The CID Number appears on each page of the manuscript.

Contents

SEMICONDUCTOR SPINTRONICS

- 11470 0W **Spin-current version of solar cells in non-centrosymmetric magnetic insulators (Invited Paper)**
[11470-29]
- 11470 0X **Theory of the nonlinear response of doped magnetic topological materials: resonant photovoltaic effect (Invited Paper)** [11470-30]
- 11470 0Z **Proximity exchange coupling across an MgO tunnel barrier detected via spin precession (Invited Paper)** [11470-32]

NEUROMORPHIC COMPUTATION

- 11470 11 **Lateral inhibition in magnetic domain wall racetrack arrays for neuromorphic computing (Invited Paper)** [11470-34]
- 11470 13 **Comparative analysis of spin based memories for neuromorphic computing (Invited Paper)**
[11470-36]

SPIN TRANSFER TORQUE

- 11470 1B **Comprehensive modeling of coupled spin-charge transport and magnetization dynamics in STT-MRAM cells (Invited Paper)** [11470-44]

SPIN HALL EFFECT

- 11470 1C **Extracting current from the lateral edges of a Hall device (Invited Paper)** [11470-45]

THZ EMISSION

- 11470 24 **Correlation of interface transmission in THz spintronic emitters with spin mixing conductance in spin pumping experiments (Invited Paper)** [11470-73]

SPIN LASERS

- 11470 2H **Intensity and polarization dynamics in ultrafast birefringent spin-VCSELs (Invited Paper)**
[11470-86]
- 11470 2I **Numerical investigation of direct IQ modulation of spin-VCSELs for coherent communications (Invited Paper)** [11470-87]
- 11470 2K **Manipulation of birefringence in spin-VCSELs (Invited Paper)** [11470-89]

2D MATERIALS II

- 11470 2M **Valley lifetimes of conduction band electrons in monolayer WSe₂ (Invited Paper)** [11470-91]

TOPOLOGICAL MATTER I

- 11470 2S **Exchange interactions in two-dimensional materials of MnBi₂Te₄-type (Invited Paper)**
[11470-97]

TOPOLOGICAL MATTER II

- 11470 39 **Interplay of anomalous Hall angle and magnetic anisotropy in ferromagnetic topological crystalline insulators (Invited Paper)** [11470-114]
- 11470 3C **Manipulating topological spin textures in multiferroic and polar materials (Invited Paper)**
[11470-117]

SKYRMIONS

- 11470 3D **Magnetic skyrmion-based programmable hardware (Invited Paper)** [11470-118]

MOLECULAR SPINTRONICS

- 11470 3H **Coordination-induced spin state switching of a new complex on surfaces (Invited Paper)**
[11470-122]

EMERGING CONCEPTS II

- 11470 3U **An exact derivation of the Thomas precession rate using the Lorentz transformation (Invited Paper)** [11470-135]
- 11470 3W **The spin degree of freedom from observer's mathematics point of view** [11470-137]
- 11470 3X **Design of an efficient VCMA controlled spintronic random number generator** [11470-138]

POSTER SESSION

- 11470 3Y **High frequency current induced domain wall motion based nano oscillator** [11470-139]
- 11470 3Z **Skymion nucleation in antiferromagnetic films** [11470-140]
- 11470 4I **Efficient in-plane nanomagnetic non-majority logic gate based arithmetic computation** [11470-142]