

# **An Antidamping Spin Orbit Torque Originating From The**

**Vladimir Litvinov** 

#### An Antidamping Spin Orbit Torque Originating From The:

Spintronics Handbook, Second Edition: Spin Transport and Magnetism Evgeny Y. Tsymbal, Igor Žutić, 2019-05-09 Spintronics Handbook Second Edition offers an update on the single most comprehensive survey of the two intertwined fields of spintronics and magnetism covering the diverse array of materials and structures including silicon organic semiconductors carbon nanotubes graphene and engineered nanostructures It focuses on seminal pioneering work together with the latest in cutting edge advances notably extended discussion of two dimensional materials beyond graphene topological insulators skyrmions and molecular spintronics. The main sections cover physical phenomena spin dependent tunneling control of spin and magnetism in semiconductors and spin based applications Spintronics Jean-Philippe Ansermet, 2024-08-13 A sound understanding of magnetism transport theory spin relaxation mechanisms and magnetization dynamics is necessary to engage in spintronics research In this primer special effort has been made to give straightforward explanations for these advanced concepts This book will be a valuable resource for graduate students in spintronics and related fields Concepts of magnetism such as exchange interaction spin orbit coupling spin canting and magnetic anisotropy are introduced Spin dependent transport is described using both thermodynamics and Boltzmann's equation including Berry curvature corrections Spin relaxation phenomenology is accounted for with master equations for quantum spin systems coupled to a bath Magnetic resonance principles are applied to describe spin waves in ferromagnets cavity mode coupling in antiferromagnets and coherence phenomena relevant to spin qubits applications Key Features A pedagogical approach to foundational concepts in spintronics with simple models that can be calculated to enhance understanding Nineteen chapters each beginning with a historical perspective and ending with an outlook on current research 1200 references ranging from landmark papers to frontline publications Jean Philippe Ansermet is Professor Emeritus at cole Polytechnique F d rale de Lausanne EPFL where he pioneered experiments on giant magnetoresistance current induced magnetization switching heat driven spin torque and nuclear magnetic resonance He taught mechanics thermodynamics and spin dynamics for more than twenty years A fellow of the American Physical Society and recipient of the 2022 Credit Suisse Teaching Award he was an executive board member of the European Physical Society president of the Swiss Physical Society and teaching director at EPFL He has authored or co authored textbooks on mechanics and thermodynamics and published more than two hundred Advances in Optoelectronic Technology and Industry Development Gin Jose, Mário Ferreira, 2019-09-25 articles This book presents recent and important developments in the field of Photonics and Optoelectronics with a particular focus on Laser Technology Optical Communications Optoelectronic Devices and Image Processing At present Photonics and Optoelectronics Technologies are pivotal to the future of laser displays sensors and communication technologies and currently being developed at an extraordinary rate This book details the theories underlying the mechanisms involved in the relevant Photonics and Optoelectronics Devices such as laser diodes photodetectors and integrated optoelectronic circuits

are investigated The reviews by leading experts are of interest to researchers and engineers as well as advanced students

Spintronics Kaiyou Wang Meivin Yang Jun Luo 2022-07-25 Discover the latest advances in spintronic materials device

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Symmetry, Spin Dynamics And The Properties Of Nanostructures - Lecture Notes Of The 11th International School On Theoretical Physics Vitalii K Dugaev, Andrzej Wal, Jozef Barnas, 2015-11-09 This book is a collection of lecture notes which were presented by invited speakers at the Eleventh School on Theoretical Physics Symmetry and Structural Properties of Condensed Matter SSPCM 2014 in Rzesz w Poland in September 2014 The main challenge for the lecturers was the objective to present their subject as a review as well as in the form of introduction for beginners Topics considered in the

volume concentrate on spin dynamics and spin transport in magnetic and non magnetic structures spin orbit interaction in two dimensional systems and graphene and new mathematical method used in the condensed matter physics Physics Robert L. Stamps, 2020-11-12 Solid State Physics Volume 71 provides the latest volume in this long running series This latest volume highlights new advances in the field with this new volume presenting interesting chapters written by an international board of authors Provides the authority and expertise of leading contributors from an international board of authors Presents the latest release in the Solid State Physics series Offers an updated release that includes the latest information in solid state physics 60 Years Of Yang-mills Gauge Field Theories: C N Yang's Contributions To Physics Lars Brink, Kok Khoo Phua, 2016-04-21 During the last six decades Yang Mills theory has increasingly become the cornerstone of theoretical physics It is seemingly the only fully consistent relativistic quantum many body theory in four space time dimensions As such it is the underlying theoretical framework for the Standard Model of Particle Physics which has been shown to be the correct theory at the energies we now can measure It has been investigated also from many other perspectives and many new and unexpected features have been uncovered from this theory. In recent decades apart from high energy physics the theory has been actively applied in other branches of physics such as statistical physics condensed matter physics nonlinear systems etc This makes the theory an indispensable topic for all who are involved in physics The conference celebrated the exceptional achievements using Yang Mills theory over the years but also many other truly remarkable contributions to different branches of physics from Prof C N Yang This volume collects the invaluable talks by Prof C N Yang and the invited speakers reviewing these remarkable contributions and their importance for the future of Frontiers in Materials: Rising Stars 2020 Anastasiia O. Krushynska, Amy Sarah Gandy, Miriam physics Navlani-García, David Salinas Torres, Chang-Mou Wu, Jong-Seok Oh, Federico Carosio, 2021-07-08 The Frontiers in Materials Editorial Office team are delighted to present the second edition of the Rising Stars article collection Frontiers in Materials Rising Stars 2020 showcasing the high quality work of internationally recognized researchers in the early stages of their independent careers All Rising Star researchers featured within this collection were individually nominated by the Topic Editors in recognition of their potential to influence the future directions of their respective fields. The work presented here highlights the diversity of research performed across the entire breadth of the materials science and engineering field and presents advances in theory experimentation and methodology with applications for solving compelling problems This Editorial features the corresponding author's of each paper published within this important collection ordered by section alphabetically highlighting them as the great researchers of the future The Frontiers in Materials Editorial Office team would like to thank each researcher who contributed their work to this collection We would also like to personally thank the Topic Editors for their exemplary leadership of this article collection their strong support and passion for this important community driven collection has ensured its success and global impact Emily Young Journal Development Manager **Emerging** 

**Devices for Low-Power and High-Performance Nanosystems** Simon Deleonibus, 2018-12-13 The history of information and communications technologies ICT has been paved by both evolutive paths and challenging alternatives so called emerging devices and architectures Their introduction poses the issues of state variable definition information processing and process integration in 2D above IC and in 3D This book reviews the capabilities of integrated nanosystems to match low power and high performance either by hybrid and heterogeneous CMOS in 2D 3D or by emerging devices for alternative sensing actuating data storage and processing The choice of future ICTs will need to take into account not only their energy efficiency but also their sustainability in the global ecosystem Magnetism in Topological Insulators Vladimir Litvinov, 2019-05-07 This book serves as a brief introduction to topological insulator physics and device applications Particular attention is paid to the indirect exchange interaction mediated by near surface Dirac fermions and the spin texture this interaction favors Along with useful information on semiconductor material systems the book provides a theoretical background for most common concepts of TI physics Readers will benefit from up to date information and methods needed to start working in TI physics theory experiment and device applications Discusses inter-spin interaction via massless and massive Dirac excitations Includes coverage of near surface spin texture of the magnetic atoms as related to their mutual positions as well to their positions with respect to top and bottom surfaces in thin TI film Describes non RKKY oscillating inter spin interaction as a signature of the topological state Explains the origin of the giant Rashba interaction at quantum phase transition in TI conventional semiconductors Spin Current Sadamichi Maekawa, Sergio O. Valenzuela, Eiji Saitoh, Takashi Kimura, 2017 In a new branch of physics and technology called spin electronics or spintronics the flow of electrical charge usual current as well as the flow of electron spin the so called spin current are manipulated and controlled together This book is intended to provide an introduction and guide to the new physics and applications of spin current

Fundamentals Of Electronic Materials And Devices: A Gentle Introduction To The Quantum-classical World

Avik Ghosh,2023-02-02 The Romans built enduring bridges well before Newton came along armed simply with a working
knowledge of mechanics and materials In contrast today s bridge building is an elaborate enterprise involving CAD tools
composite materials and acoustic imaging When technology is pushed to its limits a working knowledge proves inadequate
and an in depth understanding of core physical principles both macroscopic and microscopic top down vs bottom up becomes
essential We find ourselves today at a similar crossroad in semiconductor device technology where a working knowledge of
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Spin-wave Dynamics Driven by Spin-orbit Torque Boris Divinskiy, 2020

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