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中国科学院科技信息资源建设与开发利用研讨
暨第六届电子资源培训

武汉

2015.4.28

培训大纲

- IOP简介
- IOP期刊介绍
- IOP 电子图书介绍
- IOPscience平台与IOPebooks的使用介绍

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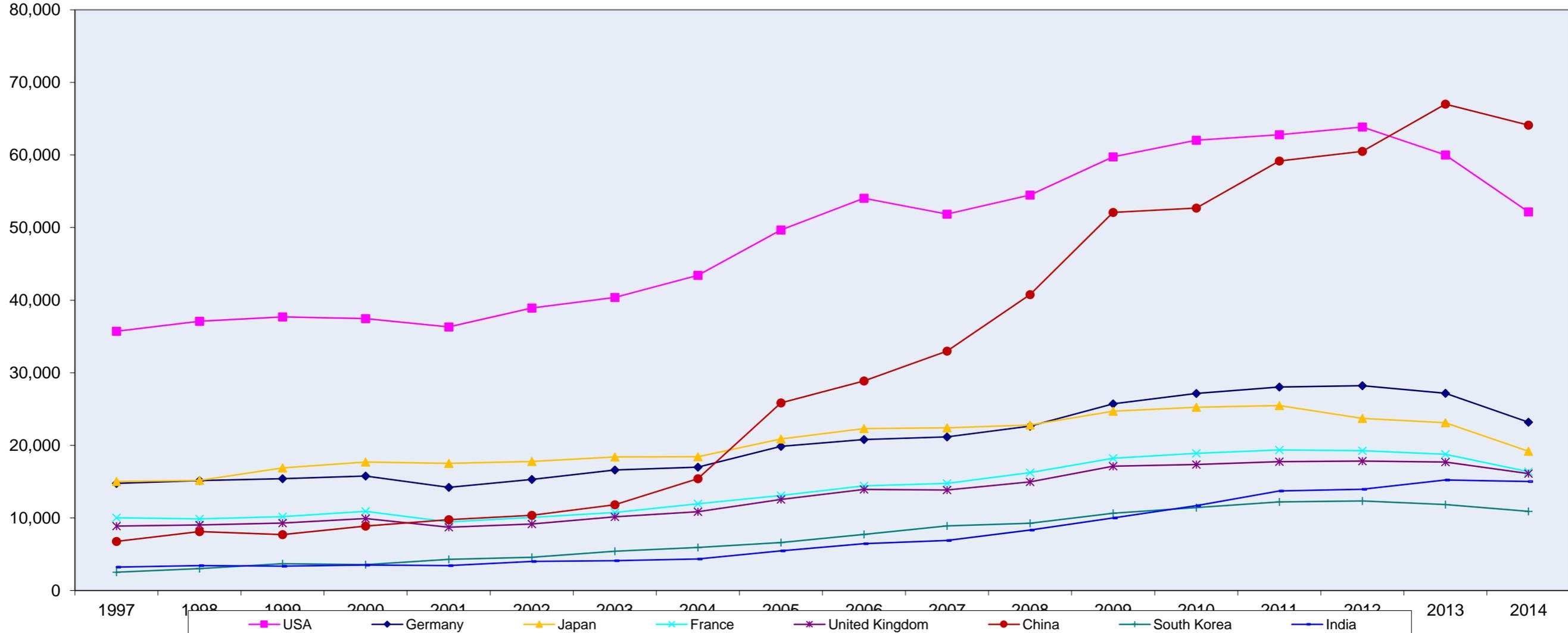
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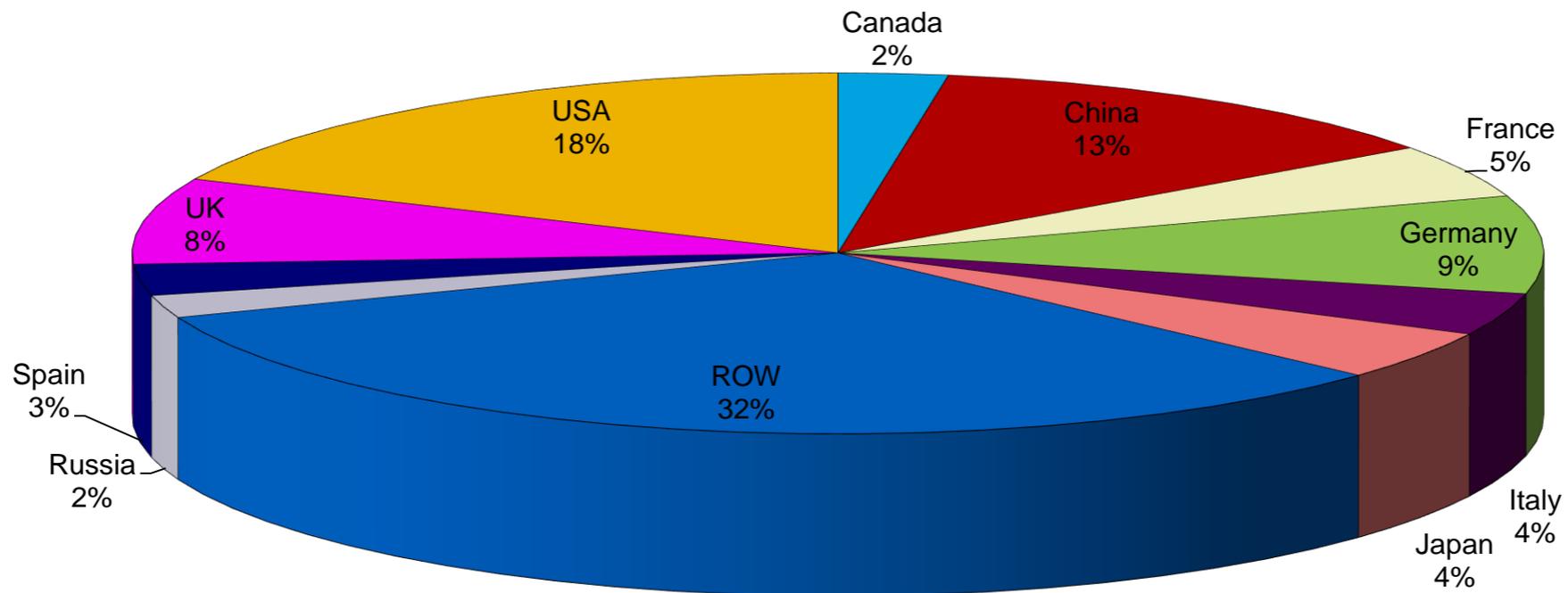
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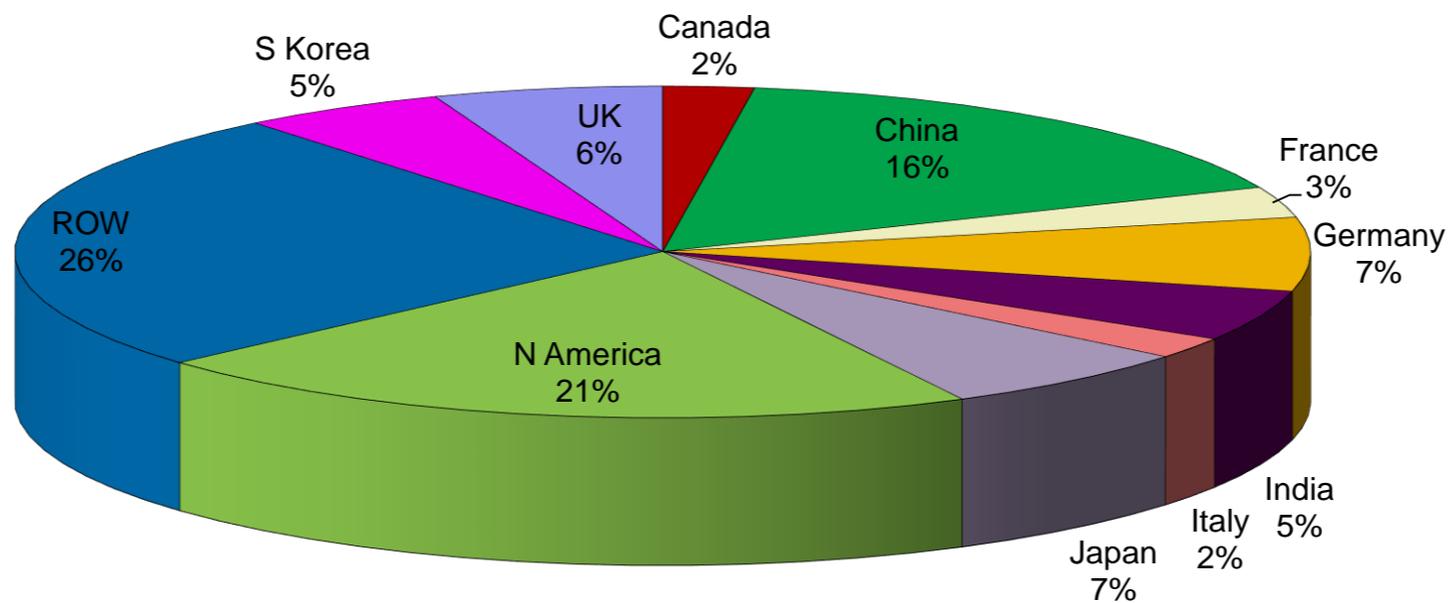
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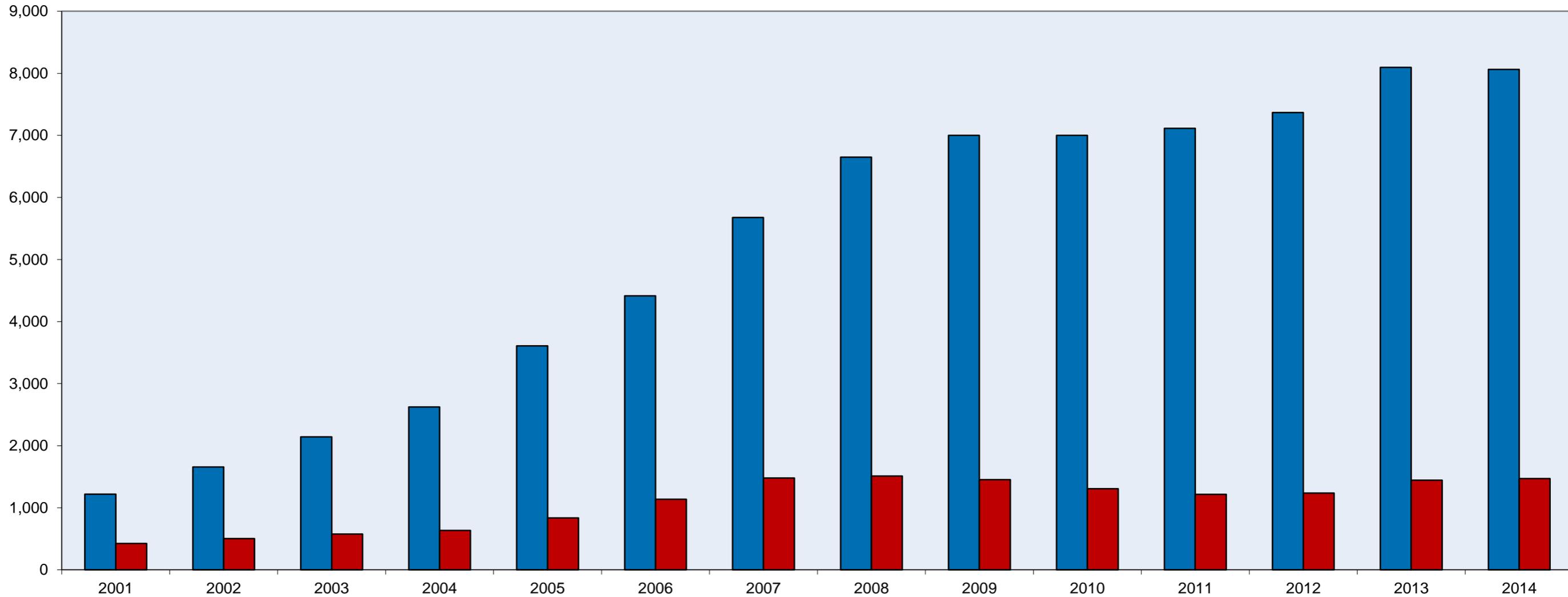
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2014年IOP期刊下载量分析（按照国家地区）



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- IOP与CAS组团开始于2008年
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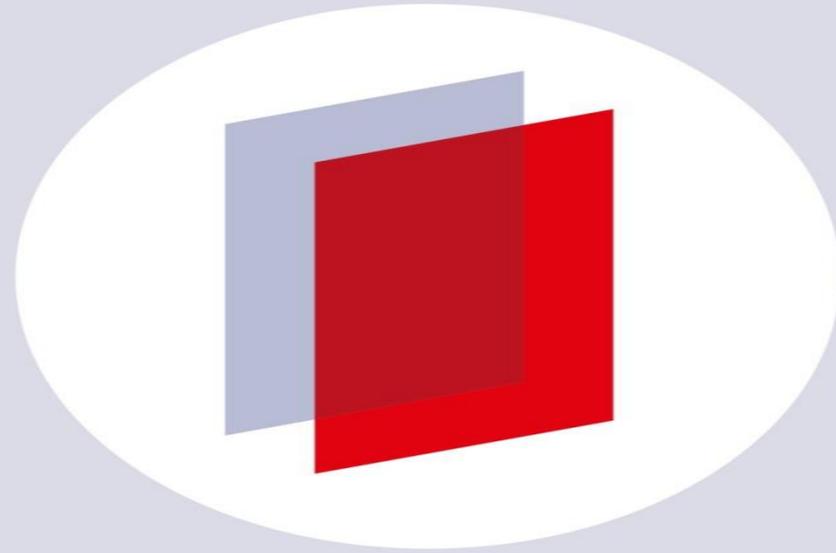
- IOP数据库无并发用户数限制

IOP经典系列期刊--Journal of Physics系列

期刊英文名称	期刊中文名称	影响因子
Journal of Optics	光学学报	2.010
Journal of Physics A: Mathematical and Theoretical	物理学学报A辑: 数理与理论物理学	1.687
Journal of Physics B: Atomic Molecular and Optical Physics	物理学学报B辑: 原子, 分子与光物理	1.916
Journal of Physics: Condensed Matter	物理学学报: 凝聚态物质	2.223
Journal of Physics: Conference Series	物理学学报: 会议录	ISTP会议录
Journal of Physics D: Applied Physics	物理学学报D辑: 应用物理学	2.521
Journal of Physics G: Nuclear and Particle Physics	物理学学报G辑: 核与粒子物理学	2.838

新增8种期刊列表

No	Titles	刊名	2013影响因子 (IF)
1	Japanese Journal of Applied Physics	日本应用物理学报	1.057
2	Applied Physics Express	应用物理快报	2.567
3	Laser Physics	激光物理学	1.025
4	Laser Physics Letters	激光物理学通讯	2.964
5	Methods and Applications in Fluorescence	荧光学方法与应用	
6	Surface Topography: Metrology and Properties	表面形貌学：计量与性质	
7	2D Materials	二维材料	
8	Materials Research Express	材料研究快讯	

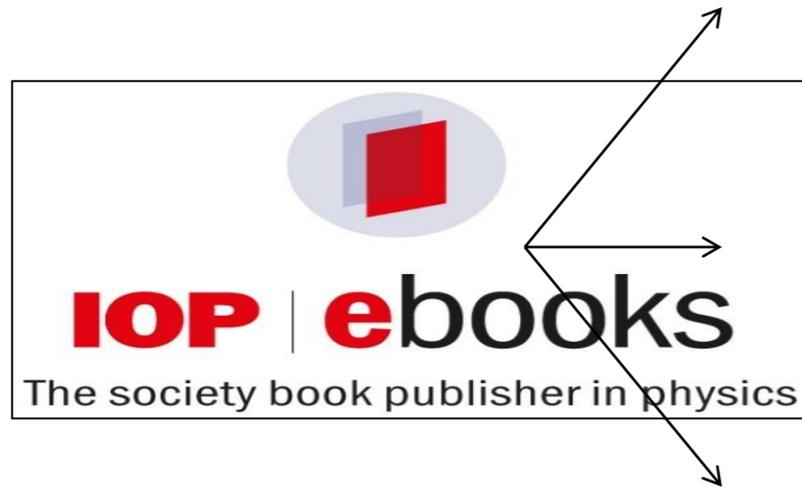


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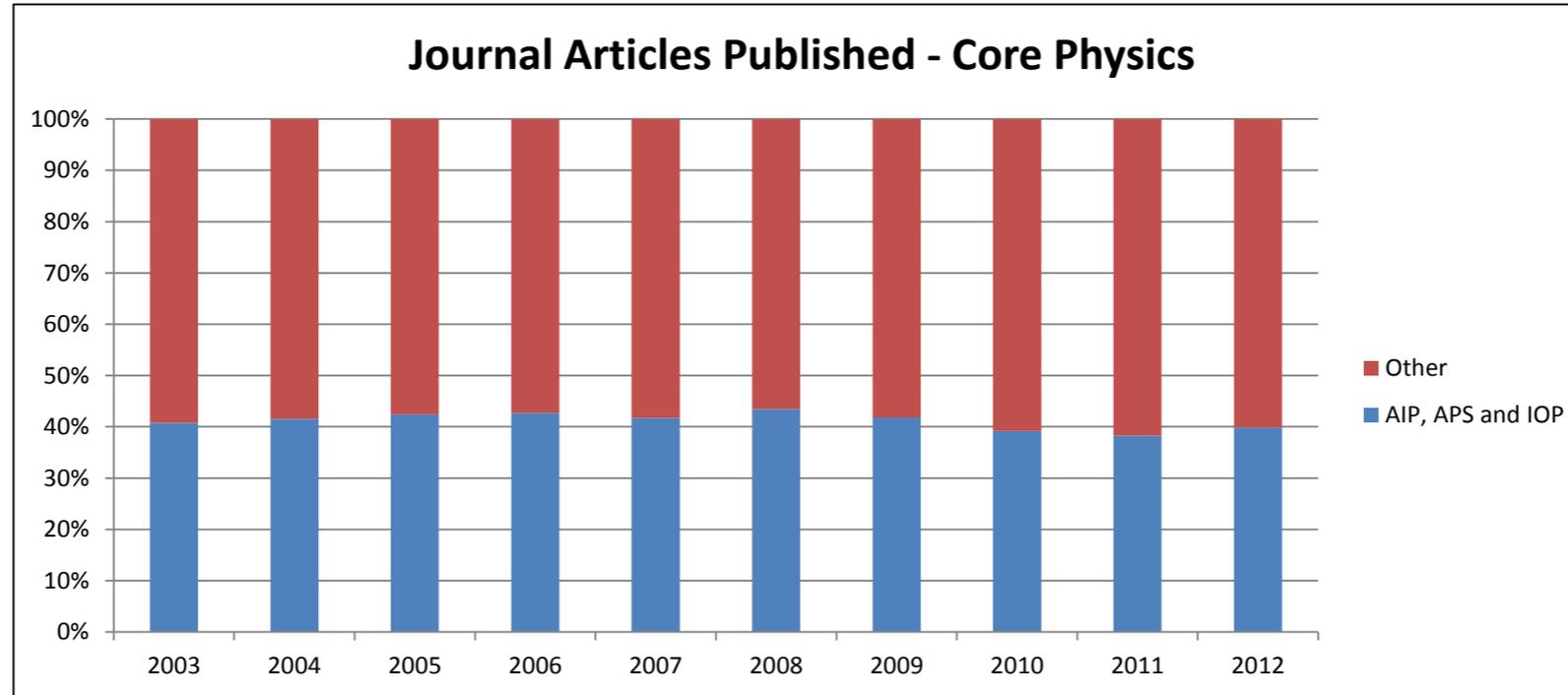
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- 但对于图书来说.....目前为零

物理学协会出版社- 质量

综合影响因子	2008	2009	2010	2011	2012
APS	4.245	4.310	4.484	4.259	4.425
IOP	2.872	2.875	2.871	2.973	3.173
AIP	2.890	2.736	2.766	2.798	2.772
Core Physics categories	2.371	2.425	2.575	2.646	2.734

- 学协会出版社提供了物理学领域中高质量的期刊内容
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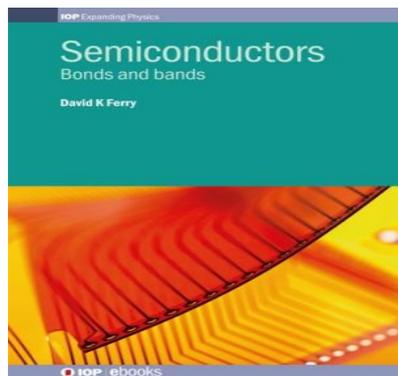


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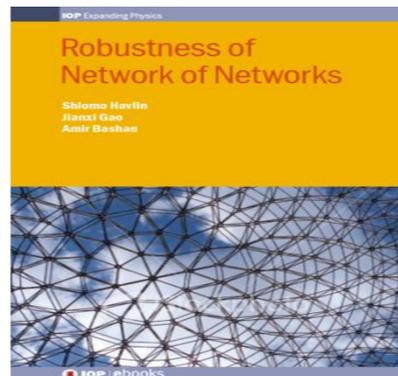
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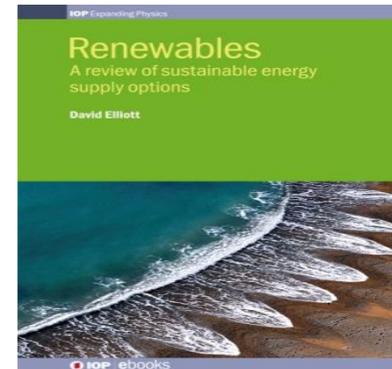
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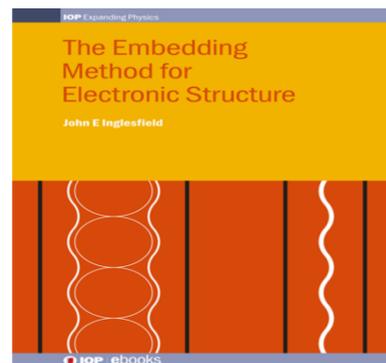
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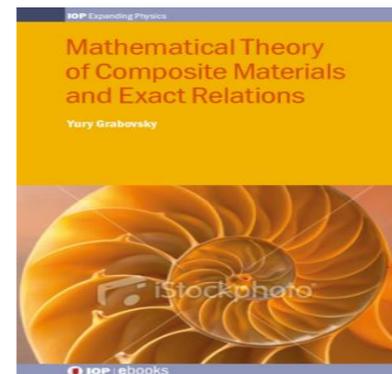
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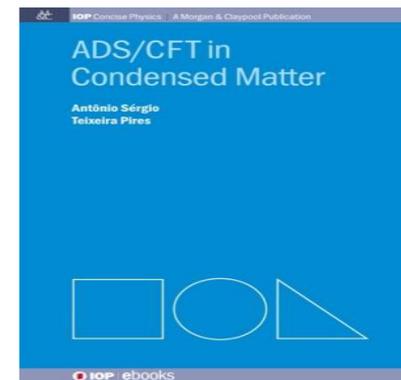
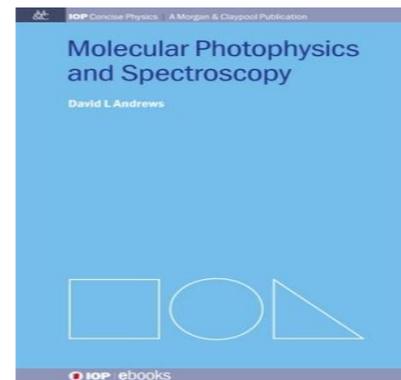
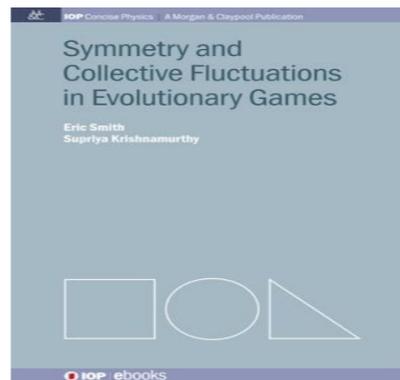
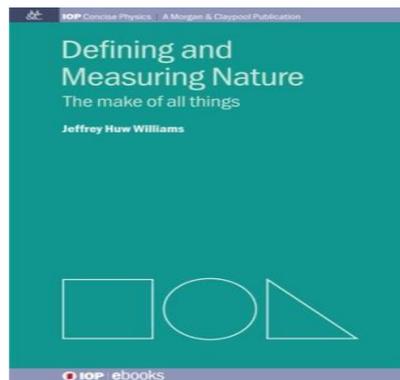
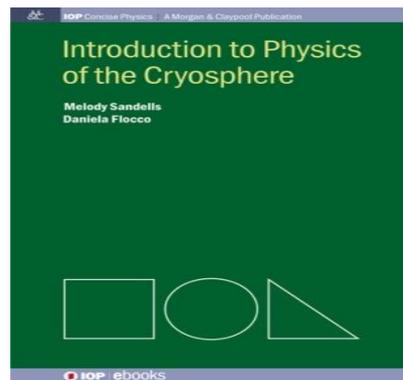
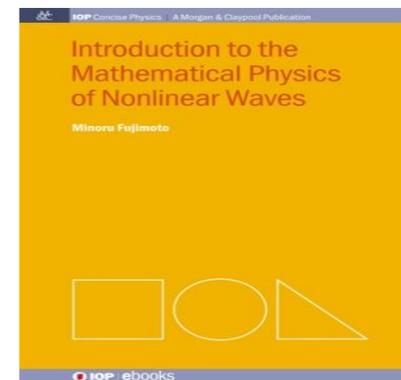
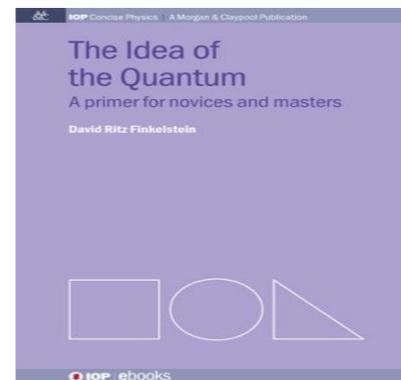
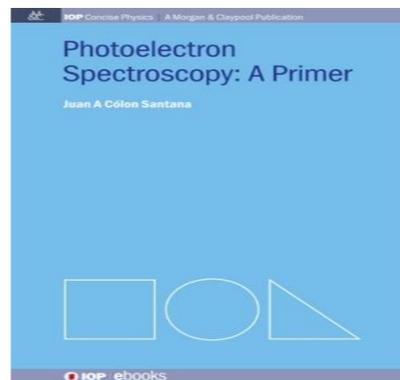
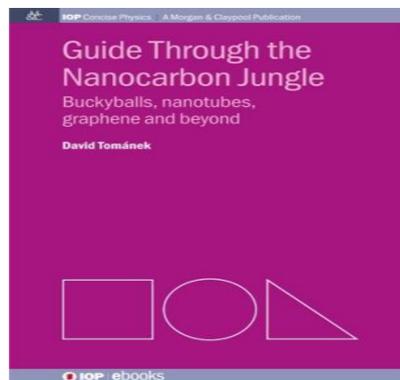
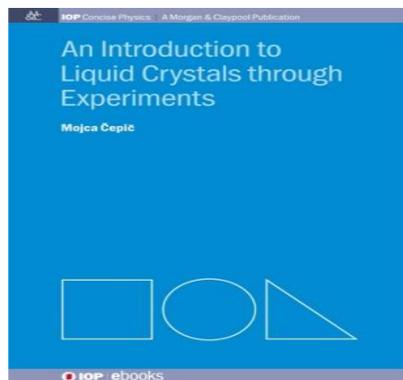


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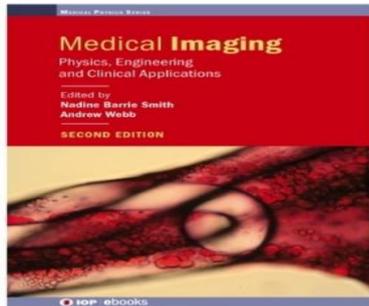
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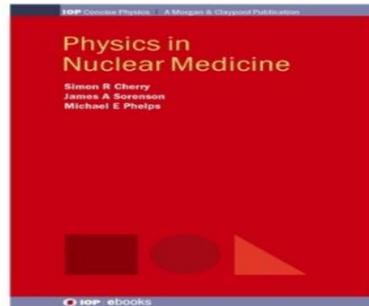
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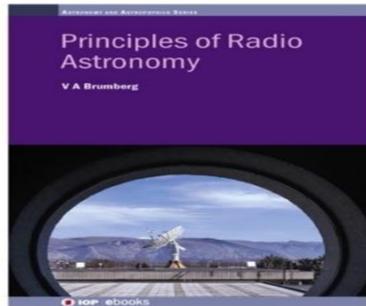


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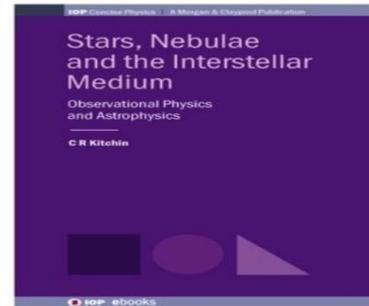


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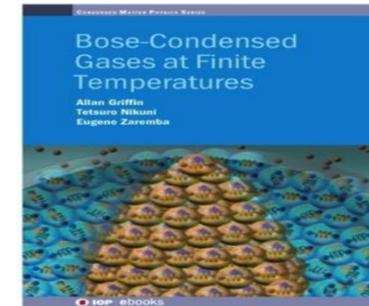


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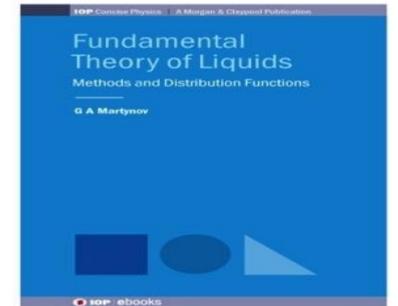


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-  geophysics and planetary science
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-  electronic materials and devices

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- Condensed matter: structural, mechanical & thermal
- Education and communication
- Electronics and devices
- Environmental and Earth science
- Fluid dynamics
- Gravitation and cosmology
- Instrumentation and measurement
- Mathematical physics
- Medical physics

Journal of Physics

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- Journal of Physics B: Atomic and Molecular Physics (1968-1987)
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<input type="checkbox"/> Dates	<input type="checkbox"/> 2014 (753)	<input type="checkbox"/> 2013 (2020)	<input type="checkbox"/> 2012 (1729)
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2014 Quantum Electronics 44 200 doi:10.1070/QE1401-011-011851015500

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| <input type="checkbox"/> Dates | <input type="checkbox"/> 2014 (333) | <input type="checkbox"/> 2013 (1077) | <input type="checkbox"/> 2012 (1179) |
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Nanotechnology 22 (2011) 444001

Nanoparticle-based monitoring of cell therapy

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Abstract
Engineered cell therapy aims to replace/repair diseased or dysfunctional cells and promises to revolutionize medicine by restoring tissue and organ function. To develop effective cell therapy, the location, distribution and long-term persistence of transplanted cells must be evaluated. Nanoparticle (NP) based imaging technologies have the potential to track transplanted cells non-invasively. Here we summarize the most recent advances in NP-based cell tracking with emphasis on (1) the design criteria for cell tracking NPs, (2) protocols for cell labeling, (3) a comparison of available imaging modalities and their corresponding contrast agents, (4) a summary of preclinical studies on NP-based cell tracking and finally (5) perspectives and future directions. (Some figures in this article are in colour only in the electronic version)

Nanotechnology, the intersection of nanoscience and biology, permits the development of new research tools and effective therapies [1]. A great example of nanotechnology in the development of drug delivery nanoparticles (NPs) [2–4]. Many biopharmaceuticals including protein, siRNA and DNA, suffer from short half-life and poor bioavailability in vivo limiting their therapeutic effect [5]. Consequently, nanosized carriers (e.g. drug microcrystals, liposomes, polymeric NPs) have emerged as an effective means to control the delivery of multiple classes of drugs and biomolecules [6, 7].

This paper focuses on the use of nanotechnology for tracking the fate and function of cells post-transplantation. Engineered cell therapy utilizes transplanted cells, in particular stem and progenitor cells, to replace or regenerate damaged or diseased tissue [8]. Transplanted cells may home to diseased tissue, regenerate tissue through direct differentiation and/or provide regenerative cues that facilitate regeneration through trophic factors and cell-cell interactions [9, 10]. Over the past 50 years, several effective cell therapies have been developed [11, 12]. For example, in 1956, the first successful bone marrow transplant was performed on a leukemia patient by Dr Donald Thomas in New York [13]. In 1997, the US Food and Drug Administration (FDA) approved autologous cultured chondrocytes for the treatment of cartilage defects in the knee [14, 15]. These successful examples and the failure of current medical practice to treat or reverse disease processes have inspired scientists and clinicians to develop new cell-based therapeutics. Promising approaches include stem cell implants for myocardial infarction [16] and neurodegenerative disease [17], and dendritic cell vaccinations for cancer therapy [18]. Currently, thousands of clinical trials around the world involve some form of cell therapy [19].

While preclinical results have been very promising, few approaches have been translated into humans. This is likely in part due to the lack of a comprehensive understanding of the fate of transplanted cells, their distribution after injection, and the level of engraftment in local microenvironments [20]. Traditionally, monitoring of therapeutic cells is conducted by histological analysis, which is laborious and invasive, requiring multiple tissue biopsies [21]. Non-invasive imaging methods

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Table 1. Imaging modalities for tracking NP-labeled cells in animals and humans.

Modality	NP-based contrast agent	Distribution	Depth	Quantitative cell tracking	Longitudinal cell tracking	Assessment of cell viability or function	Regenerative cues for cell tracking
Fluorescence	QDs, fluorescently-labeled NPs	2–5 µm	<1 cm	Yes	Yes	No	Low [22–26]
Fluorescence	Au, carbon	10 µm	<1 cm	Yes	Yes	No	Low No report
Optical coherence tomography	Au, Ag, indium NPs	~10 µm	<2 mm	Yes	Yes	No	Low No report
Magnetic resonance imaging	T2 contrast agents: CuO, CdO, MnO, FeO, or Cd ²⁺ -containing NPs T2 agent: Fe ₃ O ₄	10–100 µm	No limit	Semi-quantitative	Yes	No	High [60, 61]
Single-photon emission computed tomography	⁶⁷ Zn- or ¹¹¹ In-labeled NPs	8–10 mm	No limit	Yes	No	Yes	High No report
Positron emission tomography	⁶⁷ Zn- or ¹¹¹ In-labeled NPs	4–5 mm	No limit	Yes	No	Yes	High [44]

we urgently need for qualitatively and quantitatively monitoring transplanted cells to understand their fate and function, which will facilitate prediction of treatment efficacy, criteria of NPs, and then discuss cell labeling methods. We then concentrate on applications of NPs currently undergoing preclinical or clinical development and conclude with a

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Nonlinear detection of ultrasonic vibration of AFM cantilevers in and out of contact with the sample

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Abstract
Ultrasonic vibration can be nonlinearly detected by means of an atomic force microscopy cantilever when the tip is in contact with a sample surface owing to the so-called (sample-induced) ultrasonic force. The procedure has been developed as a novel technique, ultrasonic force microscopy (UFM), that provides information about the nanoscale elastic and adhesive properties of surfaces. Here, we compare differences in the UFM signal when ultrasound is excited from the back of the sample (sample UFM) and from the cantilever base (waveguide UFM). UFM relies on the nonlinear ultrasound-induced cantilever displacement (due to the aforementioned ultrasonic force), and does not monitor the linear high-frequency vibration of the cantilever. In this paper, we discuss the influence of a linear high-frequency cantilever response in the UFM measurements and provide experimental evidence of the feasibility of nonlinearly detecting the free ultrasonic cantilever vibration when the tip is out of contact with the sample surface using the typical laser-beam deflection method for monitoring cantilever displacements.

1. Introduction
The study of a cantilever response to ultrasonic excitation is currently attracting increasing interest [1–10]. A whole range of novel atomic force microscopy (AFM) based methods using high-frequency vibration have been proposed for the characterization of sample material properties [1–9]. In addition, some reports have already demonstrated that operation of the cantilever using higher flexural modes provides an enhanced sensitivity to force gradients in non-contact AFM [10, 11].
The usual procedure for monitoring cantilever vibration consists of tracking its response in amplitude and phase by means of a lock-in amplifier or its equivalent, using as a reference the input excitation signal. In contrast to this 'linear' detection mode [5, 12], when the tip is in contact with a sample surface, it is also possible to detect 'nonlinearly' the presence of ultrasound [1, 3] owing to the so-called [3] sample-induced ultrasonic force (stemming from the nonlinearity

of the tip-sample interaction). A physical mechanism that explains the activation of an 'ultrasonic force' when the AFM cantilever-tip is in contact with a sample surface, and the tip-sample distance is modulated at ultrasonic frequencies, is schematically illustrated in figures 1(a) and (b), and was proposed as the principle of ultrasonic force microscopy (UFM) [3, 4]. In the presence of vertical ultrasonic vibration, the tip-sample distance is varied at ultrasonic frequencies between minimum and maximum values, which depend upon the amplitude of ultrasound excitation and the initial set-point force. If the amplitude of ultrasound is small, the tip-sample distance sweeps a linear part of the force curve. The net average force that acts upon the cantilever during an ultrasonic time period will in this case be the initial set-point force. However, if the amplitude of ultrasound is increased, and the tip-sample distance is swept over the nonlinear part of the force curve, the average force now includes an additional force. Experimentally, in the presence of ultrasound of sufficient amplitude, the cantilever experiences an additional displacement (UFM signal), attributed to its response to this additional force (the 'ultrasonic' force). To date, the capabilities of UFM for mapping of mechanical

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Structural and magnetic properties of CrSb compounds: NiAs structure

S Polesya¹, G Kuhn¹, S Mankovsky¹, H Ebert¹, M Regus² and W Bensch²
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Abstract
The structural and magnetic properties of CrSb compounds with NiAs structure have been studied by means of the Korringa–Kohn–Rostoker (KKR) band structure method. An analysis of the structural and magnetic stability has been performed on the basis of total energy calculations for various magnetic states. The magnetic properties at finite temperature have been investigated by means of Monte Carlo simulations on the basis of a classical Heisenberg Hamiltonian and the exchange coupling parameters calculated from first principles. This approach allowed us to determine the critical temperature in good agreement with experiment.

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1. Introduction

The phase diagram of the Cr–Sb system [1, 2] based on experimental data exhibits the existence of two stable phases under normal conditions. The compound CrSb crystallizes in the hexagonal NiAs structure. According to experimental data obtained by

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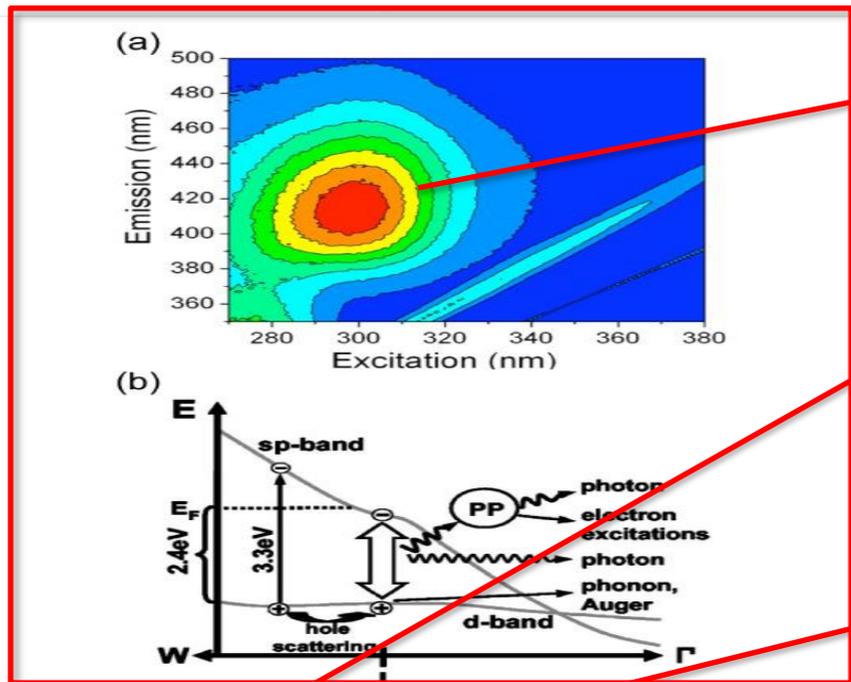


Figure 6. (a) One-photon fluorescence excitation/emission profile of pure 13 nm AuNPs. The line profile observable in the excitation wavelengths ranging from 310 to 380 nm is due to Raman scattering from water. (b) Schematic representation of electronic energy bands and transitions that give rise to AuNP absorption and fluorescence. Abbreviations (PP= particle plasmon). Reproduced from *Candys and Sobhan [112]* (a) and *Dulkeith et al [116]* (b).

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Abstract

The structural and magnetic properties of CrSb compounds with NiAs structure have been studied by means of the Korringa–Kohn–Rostoker (KKR) band structure method. An analysis of the structural and magnetic stability has been performed on the basis of total energy calculations for various magnetic states. The magnetic properties at finite temperature have been investigated by means of Monte Carlo simulations on the basis of a classical Heisenberg Hamiltonian and the exchange coupling parameters calculated from first principles. This approach allowed us to determine the critical temperature in good agreement with experiment.

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1. Introduction

The phase diagram of the Cr–Sb system [1, 2] based on experimental data exhibits the existence of two stable phases under normal conditions. The compound CrSb crystallizes in the hexagonal NiAs structure. According to experimental data obtained by magnetic neutron diffraction experiment [3], it exhibits a collinear AFM (antiferromagnetic) structure up to the Néel temperature ($T_N = 705$ K [3], $T_N = 723$ K [4]). Takei *et al* investigated the ternary system $\text{CrTe}_{1-x}\text{Sb}_x$ [5] and also found a transition from the FM (ferromagnetic) structure to the AFM structure approaching the Sb rich region of concentrations. The local magnetic moment per Cr atom found at room temperature (RT) is $2.7 \mu_B$ [4], $2.84 \mu_B$ [5] and $3.0 \mu_B$ extrapolated to 0 K [5].

In the literature there are only a few theoretical investigations on the electronic structure and magnetic properties of CrSb based on first principles calculations. Ito *et al* [6] analyzed the electronic structure of CrSb using the full-potential linear muffin-tin orbital (FP-LMTO) method and compared it with that of CrP and CrAs having the MnP type of structure. For the AFM state they found the Cr magnetic moment to be equal to $2.7 \mu_B$. Kahal *et al* [7] have used the full-potential linear augmented plane wave (FP-LAPW) method for calculations of electronic and magnetic properties, and the phase stability of CrSb with NiAs and zinc-blende structures. They found the NiAs structure with AFM order to be the ground state of the system, and the Cr magnetic moments are $2.47 \mu_B$ for the FM and $2.91 \mu_B$ for the AFM state. Using the augmented spherical-orbital (ASO) method, Dilatek *et al* [8] calculated

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Adaptive-network models of swarm dynamics

Cristián Huepe^{1,3}, Gerd Zschaler², Anne-Ly Do² and Thilo Gross²
[Show affiliations](#)

Cristián Huepe *et al* 2011 *New J. Phys.* **13** 073022
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Abstract

We propose a simple adaptive-network model describing recent swarming experiments. Exploiting an analogy with human decision making, we capture the dynamics of the model using a low-dimensional system of equations permitting analytical investigation. We find that the model reproduces several characteristic features of swarms, including spontaneous symmetry breaking, noise- and density-driven order–disorder transitions that can be of first or second order, and intermittency. Reproducing these experimental observations using a non-spatial model suggests that spatial geometry may have less of an impact on collective motion than previously thought.



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GENERAL SCIENTIFIC SUMMARY

Introduction and background. To understand how groups of self-propelled individuals (such as bird flocks, fish schools or insect swarms) make collective decisions, simple, low-dimensional descriptions of population-level behaviour are highly desirable. In closely related research on human decision making, analytically tractable modelling approaches based on network theory are used.

Main results. We introduce a simple adaptive-network model describing swarming experiments by Buhl *et al* (2006 *Science* **312** 1402–6), where groups of locusts march freely in a ring-shaped arena. At low insect densities, no ordered collective motion is observed, whereas at high insect densities a common persistent marching direction emerges. Our model captures these two regimes and identifies the swarming transition as a (subcritical or supercritical) pitchfork bifurcation. It

Contents

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The structural and magnetic properties of CrSb compounds with NiAs structure have been studied by means of the Korringa-Kohn-Rostoker (KKR) band structure method. An analysis of the structural and magnetic stability has been performed on the basis of total energy calculations for various magnetic states. The magnetic properties at finite temperature have been investigated by means of Monte Carlo simulations on the basis of a classical Heisenberg Hamiltonian and the exchange coupling parameters calculated from first principles. This approach allowed us to determine the critical temperature in good agreement with experiment.

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1. Introduction

The phase diagram of the Cr-Sb system [1, 2] based on experimental data exhibits the existence of two stable phases under normal conditions. The compound CrSb crystallizes in the hexagonal NiAs structure. According to experimental data obtained by magnetic neutron diffraction experiment [3], it exhibits a collinear AFM (antiferromagnetic) structure up to the Néel temperature ($T_N = 705$ K [3], $T_N = 723$ K [4]). Takei *et al* investigated the ternary system CrTe_{1-x}Sb_x [5] and also found a transition from the FM (ferromagnetic) structure to the AFM structure approaching the Sb rich region of concentrations. The local magnetic moment per Cr atom found at room temperature (RT) is 2.7 μ_B [4], 2.84 μ_B [5] and 3.0 μ_B extrapolated to 0 K [5].

In the literature there are only a few theoretical investigations based on first principles calculations. Ito *et al* [6] analyzed the electronic structure using the linear muffin-tin orbital (LMTO) method and compared it with that of CrP and CrAs having the same structure. They found the NiAs structure with AFM order to be most stable. Kahal *et al* [7] have used the augmented spherical wave (ASW) method. Dijkstra *et al* [8] calculated the electronic structure of CrSb based on the full-potential linear muffin-tin orbital (FP-LMTO) method and found the CrSb to have the NiAs structure (FP-LMTO). The local magnetic moments are 2.478 μ_B for the FM and 3.01 μ_B for the AFM state. Using the augmented spherical wave (ASW) method, Dijkstra *et al* [8] calculated

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Mössbauer investigations of crystalline and quasicrystalline $\text{Al}_3(\text{Mn}, \text{Fe})$ compounds

FREE ARTICLE

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Published 10 November 2011

Abstract

⁵⁷Fe Mössbauer and magnetic measurements are reported on Taylor phase compounds $\text{T-Al}_3(\text{Mn}, \text{Fe})$, which can be seen as complex metallic alloys. The orthorhombic unit cell contains 156 atoms. These investigations are further extended to $\text{Al}_{17}\text{Mn}_{19}\text{Fe}_{10}$ crystallizing as a decagonal quasicrystal. Common to both structures are layers, which are oriented perpendicular to the b axis in the crystalline or to the periodic axis in the quasicrystalline compound, allowing the formation of characteristic building blocks. At low temperatures for all samples spin glass behavior is observed with freezing temperatures T_f increasing with Fe content. Above T_f the ⁵⁷Fe Mössbauer spectra were analyzed by a superposition of two subspectra with intensity ratio around

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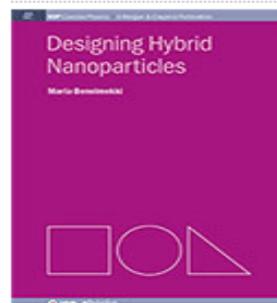
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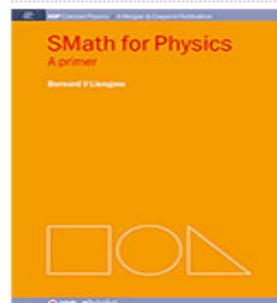
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Author: Maria Benelmekki
Published April 2015

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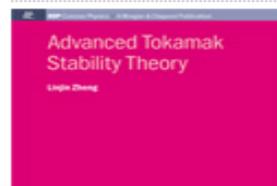


SMath for Physics

A primer

Author: Bernard V Liengme
Published March 2015

SMath is a free mathematical notebook program similar to Mathcad that provides many options for studying and solving complex mathematical equations. This book is a primer providing a concise but thorough introduction that keeps physics at a fairly low level so readers can concentrate on understanding the SMath features. The major features are introduced step by step and focus on using SMath as a simple scratch pad.



Advanced Tokamak Stability Theory

Author: Linjin Zheng
Published March 2015

The intention of this book is to introduce advanced tokamak stability theory. We start with the derivation of the Grad–Shafranov equation and the construction of various toroidal flux coordinates. An analytical tokamak equilibrium theory is presented to

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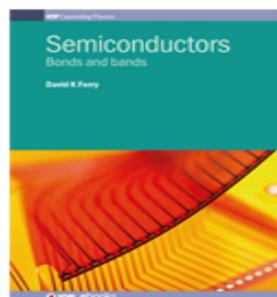
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Bonds and bands



As we settle into this second decade of the twenty-first century, it is evident that the advances in micro-electronics have truly revolutionized our day-to-day lifestyle. The technology is built upon semiconductors, materials in which the band gap has been engineered for special values suitable to the particular application. This book, written specifically for a one semester course for graduate students, provides a thorough understanding of the key solid state physics of semiconductors. It describes how quantum mechanics gives semiconductors unique properties that enabled the micro-electronics revolution, and sustain the ever-growing importance of this revolution.

Author: David K Ferry

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PDF book



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Table of contents

[Front matter](#)

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[Introduction](#)

David K Ferry

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Pages 1-1 to 1-7

Front matter

 PDF  ePub

Introduction

David K Ferry

Pages 1-1 to 1-7

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Electronic structure

David K Ferry

Pages 2-1 to 2-53

 View chapter  PDF  ePub

Lattice dynamics

David K Ferry

Pages 3-1 to 3-32

 View chapter  PDF  ePub

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David K Ferry

Pages 4-1 to 4-38

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Carrier transport

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Pages 5-1 to 5-41

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[Table of Contents](#)

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Figures

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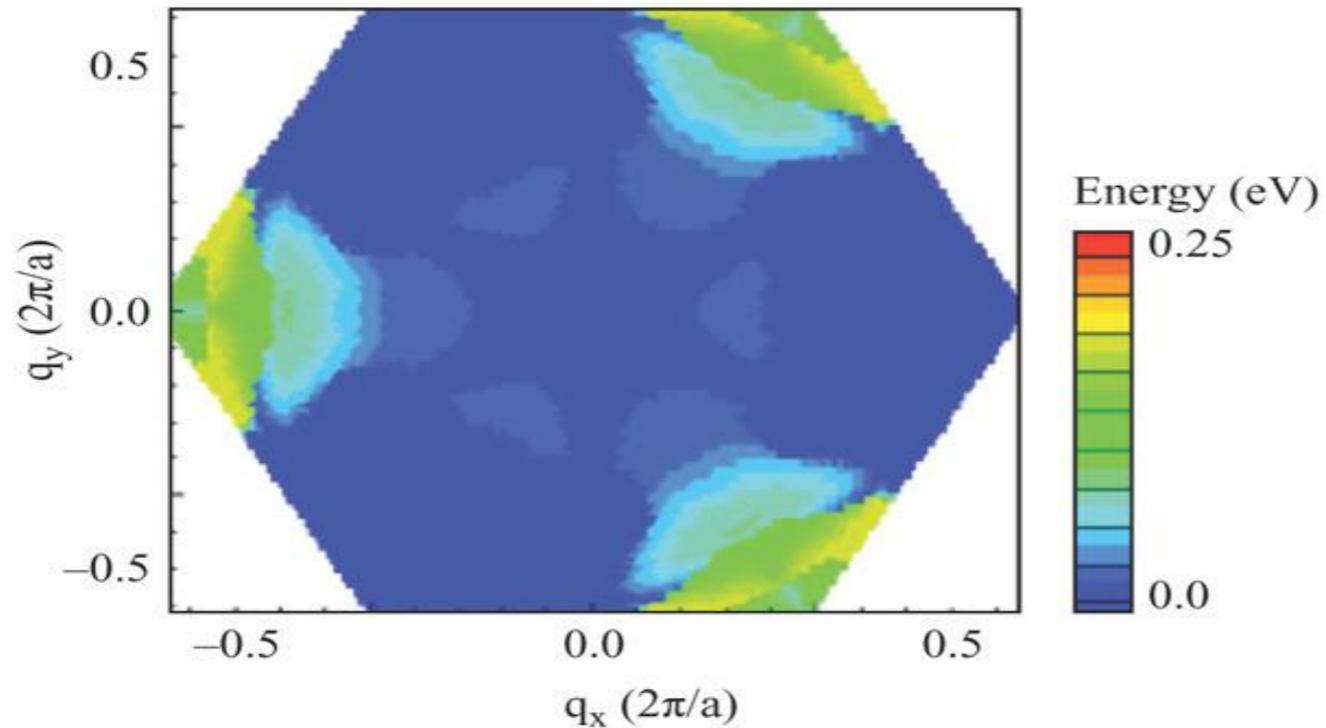
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1.1 What is included in device modeling?

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Figure 1.2. The relative scattering strength of an electron at the K point in graphene and scattering to other points in the Brillouin zone via the optical phonons. The brighter green colors represent a stronger coupling constant and hence more scattering. The image was computed by Max Fischetti (from UT Dallas) using a pseudopotential approach, and is reproduced here with his permission.

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Contents

Abstract

1.1 What is included in device modeling?

1.2 What is in this book?

Problems

Book Menu

Related Content

is the subject of chapter 4.

Figures

Finally, in chapter 5, we discuss simple transport theory for electrons that remain near the band edges and can be described by the relaxation time approximation. This allows us to discuss mobility, conductivity, the Hall effect and other transport concepts.

References

Problems

- One may think of a metal–oxide–semiconductor field-effect transistor of a capacitor in which the gate induces charge in the semiconductor, in which the charge can be written as

$$Q = -n_s e = C_{\text{ox}}(V_{\text{gate}} - V_T - V(y)),$$

V_T is the threshold voltage (voltage at which charge begins to accumulate) and $V(y)$ is the surface potential at the semiconductor–oxide interface. If we write the drain–source current as $I = Qv = Q\mu E$, with the field given by $E = -dV(y)/dy$, then show that for the boundary conditions where the surface voltage is zero at the source end of the channel and V_D at the drain end, the current is given by

$$I = \frac{W\mu C_{\text{ox}}}{L_G} (V_{\text{gate}} - V_T - \frac{V_D}{2}) V_D,$$

where W is the width of the channel and L_G is the source–drain distance.

- If we let the mobility μ be a function of the field according to

$$\mu = \frac{\mu_0}{1 + \frac{\mu_0 E}{v_{\text{sat}}}},$$

where v_{sat} is the saturation, or maximum, velocity, rederive the current equation given in problem 1.

- Consider that the average power input per electron is given by $evE = e\mu E^2$. Assuming that one is in the linear regime, where the drain voltage is small compared with $V_{\text{gate}} - V_T$, find an expression for the power input per electron throughout the channel for the first problem. (Hint: one must first find an expression for the channel voltage as a function of position.)

Contents

Abstract

1.1 What is included in device modeling?

1.2 What is in this book?

Problems

Book Menu

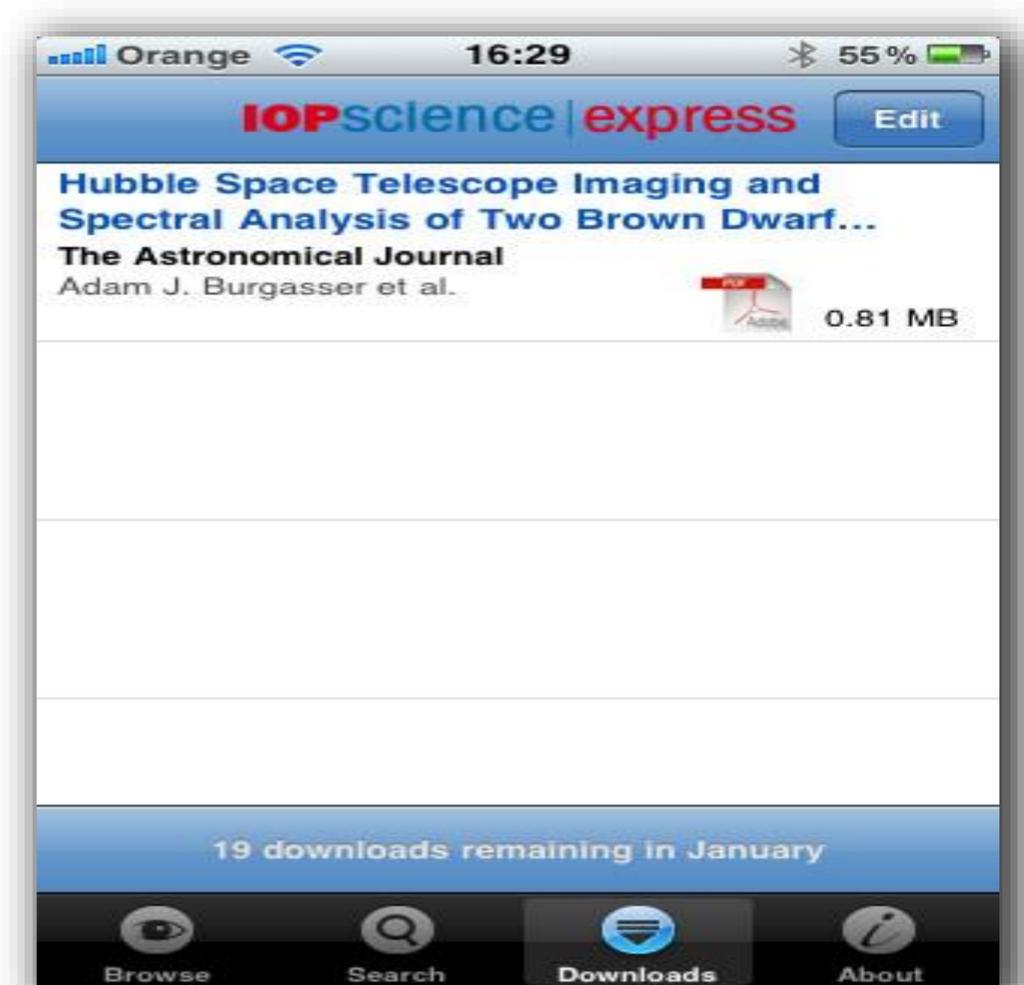
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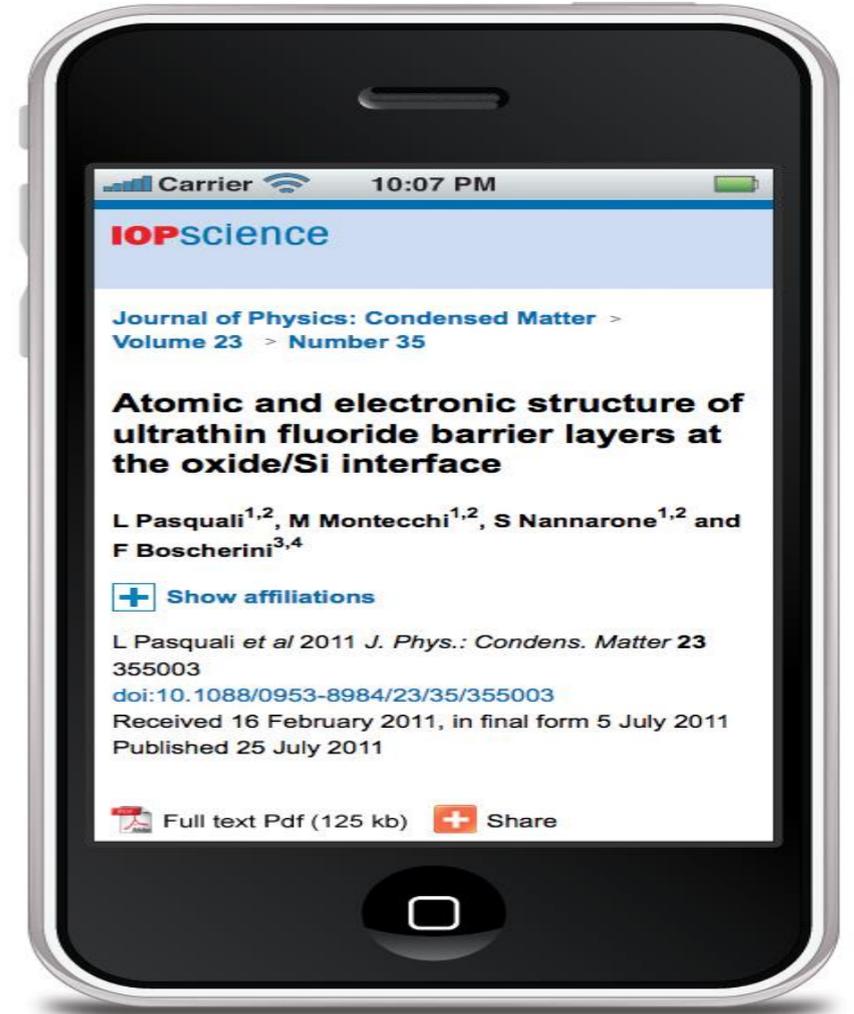
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