

Physics–Uspekhi

Advances in Physical Sciences

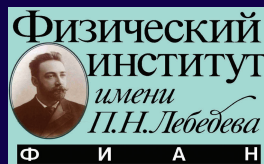


July 2022

Volume 65, Number 7

Translation of the Russian journal
Успехи физических наук, Uspekhi Fizicheskikh Nauk

July 2022, Volume 192, No. 7



PHYSICS- USPEKHI

ISSN 1063-7869 (Print)
ISSN 1468-4780 (Online)

CODEN: PHUSEY

Uspekhi Fizicheskikh Nauk

Editor Valery A Rubakov
Associate Editors Lev P Pitaevskii, Oleg V Rudenko
Managing Editor Maria S Aksent'eva
Advisory Board Evgenii B Aleksandrov
Fazly I Ataullakhanov
Yurii V Gulyaev
Sergei P Denisov
Lev M Zelenyi
Aleksandr A Kaplyanskii
Olga A Kocharovskaya
Gennadii N Kulipanov
Aleksandr G Litvak
Gennadii A Mesyats
Rashid A Sunyaev
Aleksei R Khokhlov
Anatolii M Cherepashchuk

Editorial Board

Petr I Arseev
Vasily S Beskin
Aleksandr E Bondar'
Vadim V Brazhkin
Mikhail A Vasil'ev
Mikhail I Vysotskii
Igor M Dreminev
Aleksei M Zheltikov
Genrikh R Ivanitskii
Dmitrii I Kazakov
Vitalii V Kveder
Nikolai N Kolachevskii
Zakharii F Krasil'nik
Evgenii A Kuznetsov
Sergei A Nikitov
Vladimir F Obraztsov
Pavel N Pakhlov
Konstantin A Postnov
Vladimir I Ritus
Grigorii I Rubtsov
Mikhail V Sadovskii
Aleksandr M Sergeev
Boris M Smirnov
Robert A Suris
Dmitrii R Khokhlov
Maria V Chekhova
Evgenii M Churazov

Scientific and Staff Editors

MS Aksent'eva, EA Frimer, TG Orekhova,
TP Romanova, EV Zakharova

Uspekhi Fizicheskikh Nauk (Успехи Физических Наук, www.ufn.ru) publishes reviews of the current state of the most topical problems in physics and in associated fields under the general headings: reviews of topical problems, physics of our days, instruments and methods of investigation, methodological notes, from the history of physics, conferences and symposia, personalia, physics news on the Internet, and bibliography. The journal was founded in 1918 and is published monthly.

Physics – Uspekhi

Scientific Editors
MS Aksent'eva, VL Derbov, AM Semikhatov
English Language Editor
K Franchuk
Desk Editors
AV Bobkov, AN Gribkov, MA Morgunova

Physics–Uspekhi (Advances in Physical Sciences) is the English edition of the Russian monthly journal *Uspekhi Fizicheskikh Nauk*. Translation into English started with Russian volume 66. From 1958 until 1992 the journal was published by American Institute of Physics under the title *Soviet Physics–Uspekhi* and in 1993 under its current title *Physics – Uspekhi*. Since 1994 *Physics – Uspekhi* has been published jointly by Uspekhi Fizicheskikh Nauk and Turpion Ltd. From the beginning of 1996 *Physics – Uspekhi* is being translated, typeset and edited in Moscow by Uspekhi Fizicheskikh Nauk (UFN), from 2009 published by Uspekhi Fizicheskikh Nauk, Moscow, printed by Page Bros, Norwich, UK.

Institutional subscription information (volume 65, 2022, monthly)
For all countries, except the United States, Canada, Central and South America, the subscription rates are: Print + Online (1958 – 2022) £ 2052; Online only (1958 – 2022) £ 1846. Delivery is by air-speeded mail from the UK.

Orders, back issues, change of address to: Physics–Uspekhi, Journals Subscription Fulfilment, IOP Publishing, Temple Circus, Temple Way, Bristol BS1 6HG, United Kingdom

For the United States, Canada, Central and South America, the subscription rates are:
Print + Online (1958 – 2022) US \$3695; Online only (1958 – 2022) US \$3325. Delivery is by transatlantic airfreight and onward mailing.
United States Postal Identification Statement *Physics – Uspekhi*, volume 65, published monthly. Periodicals Postage Paid at Continental Station, PA and additional mailing offices.
POSTMASTER: Send orders, address changes to *Physics – Uspekhi*, IOP Publishing, PO Box 320, Congers, NY 10920-0320, USA.

Online services: Since 2008 electronic access to the journal content is hosted by IOP Publishing. All subscriptions to the journal include electronic access dating from the first English translation volume. The electronic version of the journal is available at <http://iopscience.org/phu>. All questions regarding online access should be sent to customer services at customerservices@iopublishing.org

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form, or by any means, electronic, mechanical, photographic, recording, or otherwise, without the prior permission of *Uspekhi Fizicheskikh Nauk*.

Editorial Office: P N Lebedev Physical Institute, RAS, Leninskii prospekt 53, 119991 Moscow, Russian Federation
Tel. (7-499) 132 62 65, (7-499) 190 34 52
Tel./Fax (7-499) 190 42 44.
E-mail: ufn@ufn.ru

Contents

	To the readers of Physics–Uspekhi	651
	V A Rubakov	
697	The SMEFT formalism: the basis for finding deviations from the Standard Model	653
	E E Boos	
722	Gas-dynamic sources of cluster ions for basic and applied research	677
	A E Ieshkin, A B Tolstoguzov, N G Korobeishchikov, V O Pelenovich, V S Chernysh	
754	Approaches to determining curvature of wafers by their topography	706
	A A Dedkova, I V Florinsky, N A Djuzhev	
772	Room-temperature superconductivity: from dream to reality	723
	(Scientific session of the Physical Sciences Division of the Russian Academy of Sciences, May 12, 2021): contribution by M V Sadovskii; T K Kim, K S Pervakov, V A Vlasenko, A V Sadakov, A S Usol'tsev, D V Evtushinsky, S Jung, G Poelchen, K Kummer, D Roditchev, V S Stolyarov, I A Golovchanskiy, D V Vyalikh, V Borisov, R Valentí, A Ernst, S V Eremeev, E V Chulkov, V M Pudalov; I A Troyan, D V Semenok, A G Ivanova, A G Kvashnin, D Zhou, A V Sadakov, O A Sobolevskiy, V M Pudalov, I S Lyubutin, A R Oganov	
815	Marat Ravil'evich Gil'fanov (on his 60th birthday)	762
814	Physics news on the Internet	764
	Yu N Eroshenko	

◇ ◇ ◇

In the next issue

Oscillatory modes of concentration convection

M O Denisova, A L Zuev, K G Kostarev

Phase singularities and optical vortices in photonics

A P Porfirev, A A Kuchmizhak, S O Gurbatov, S Juodkazis, S N Khonina,
Yu N Kulchin

Optical tweezers and manipulators. Modern concepts and future prospects

B V Sokolenko, N V Shostka, O S Karakchieva

Accelerator-based neutron source for boron neutron capture therapy

A A Ivanov, A N Smirnov, S Yu Taskaev, B F Bayanov, Yu I Belchenko,
V I Davydenko, A Dunaevsky, I S Emelev, D A Kasatov, A N Makarov,
M Meekins, N K Kuksanov, S S Popov, R A Salimov, A L Sanin,
I N Sorokin, T V Sycheva, I M Shudlo, D S Vorob'ev, V G Cherepkov,
S N Fadeev

Remote measurement of the temperature distribution on the surface of solids under high-power laser irradiation

P V Zinin, K M Bulatov, A A Bykov, Yu V Mantrova, I B Kutuza

Vertical refraction of light in the atmospheric surface layer: traditional problems of determining refraction and new technical achievements

V P Savinykh, I Yu Vasyutinsky,
D V Dement'ev

Physics news on the Internet

