

PHYSICS– USPEKHI

English edition of *Uspekhi Fizicheskikh Nauk*
September 2004 Volume 174 Number 9

Contents

Volume 47
Number 9
2004
Pages 855–964

REVIEWS OF TOPICAL PROBLEMS

**Tunnel and multiphoton ionization of atoms and ions
in a strong laser field (Keldysh theory)** 855
V S Popov

**The electron runaway mechanism in dense gases and the production
of high-power subnanosecond electron beams** 887
V F Tarasenko, S I Yakovlenko

Self-action effects for wave beams containing shock fronts 907
O V Rudenko, O A Sapozhnikov

**Waves and patterns in reaction–diffusion systems.
Belousov–Zhabotinsky reaction in water-in-oil microemulsions** 923
V K Vanag

CONFERENCES AND SYMPOSIA

**Joint scientific session of the Physical Sciences Division
of the Russian Academy of Sciences
and the Joint Physical Society of the Russian Federation
(21 April 2004):** 943

Josephson solid-state qubits 943
Yu A Pashkin, O V Astafiev, T Yamamoto,
Y Nakamura, J S Tsai

Superconducting states and magnetic hysteresis in finite superconductors 944
G F Zharkov

Continued overleaf

Contents continued

Coexistence of ferromagnetism and nonuniform superconductivity V F Elesin, V V Kapaev, Yu V Kopaev	949
Theory of magnetic contacts between clean superconductors Yu S Barash, I V Bobkova, T Kopp	953
High-temperature superconductivity today E G Maksimov	957
PERSONALIA	
In memory of Mikhail Leonovich Ter-Mikaelyan É S Vardanyan, V L Ginzburg, Yu M Kagan, L V Keldysh, B V Kryzhanovskii, A L Mikaélyan, M I Ryazanov, F T Sarkisyan, V Ya Faĭnberg, E L Feĭnberg, Yu G Shukuryan, I A Shcherbakov	959
BIBLIOGRAPHY	
New books on physics and related sciences E V Zakharova	961
Physics news on the Internet Yu N Eroshenko	963

Contents

Tunnel and multiphoton ionization of atoms and ions in a strong laser field (Keldysh theory) V S Popov	855
The electron runaway mechanism in dense gases and the production of high-power subnanosecond electron beams V F Tarasenko, S I Yakovlenko	887
Self-action effects for wave beams containing shock fronts O V Rudenko, O A Sapozhnikov	907
Waves and patterns in reaction–diffusion systems. Belousov–Zhabotinsky reaction in water-in-oil microemulsions V K Vanag	923
Joint scientific session of the Physical Sciences Division of the Russian Academy of Sciences and the Joint Physical Society of the Russian Federation (21 April 2004):	943
Josephson solid-state qubits Yu A Pashkin, O V Astafiev, T Yamamoto, Y Nakamura, J S Tsai	943
Superconducting states and magnetic hysteresis in finite superconductors G F Zharkov	944
Coexistence of ferromagnetism and nonuniform superconductivity V F Elesin, V V Kapaev, Yu V Kopaev	949
Theory of magnetic contacts between clean superconductors Yu S Barash, I V Bobkova, T Kopp	953
High-temperature superconductivity today E G Maksimov	957
In memory of Mikhail Leonovich Ter-Mikaelyan	959
New books on physics and related sciences E V Zakharova	961
Physics news on the Internet Yu N Eroshenko	963

◇ ◇ ◇

In the next issue

<i>Convergence problems of Coulomb and multipole crystal sums</i> E V Kholopov
<i>Nonequilibrium thermodynamics of autowave processes in a catalyst bed</i> A P Gerasev
<i>Physical interpretation of the elements of image algebra</i> V A Utrobin
<i>A fairy tale of stopped light</i> E B Aleksandrov, V S Zapasskiĭ
<i>Conferences and symposia</i>
<i>Bibliography</i>
<i>Physics news on the Internet</i>

