

Contents

Strategy of Research	1
Organization of Advanced Science Research Center	2
Research Highlights	
Effects of mechanical rotation on spin currents	3
M. Matsuo, J. Ieda, E. Saitoh, and S. Maekawa	
New type of asymmetric fission in proton-rich nucleus ^{180}Hg	4
K. Nishio, A. N. Andreyev <i>et al.</i>	
Hidden-order state in URu_2Si_2 : High-quality single crystal and novel techniques	5
Y. Haga, T. D. Matsuda, E. Yamamoto, Y. Ōnuki, R. Yoshida, Y. Nakamura, M. Fukui, M. Okawa, S. Shin, M. Hirai, Y. Muraoka, T. Yokoya, R. Okazaki, T. Shibauchi, H. J. Shi, H. Ikeda, and Y. Matsuda	
A specific Ce anomaly during sorption of rare earth elements on biogenic Mn oxide produced by <i>Acremonium</i> sp. strain KR21-2	6
K. Tanaka, Y. Tani, Y. Takahashi, M. Tanimizu, Y. Suzuki, N. Kozai, and T. Ohnuki	
Detection of excess electron spins in magnetic substances using highly spin-polarized positrons	7
A. Kawasuso, M. Maekawa, Y. Fukaya, A. Yabuuchi, and I. Mochizuki	
REIMEI Research Project: New approach to the exotic phases of actinide compounds under unconventional experimental conditions	8
G. H. Lander, A. Hiess, and S. Kambe	
Group Activities	
Research Group (R.G.) for Condensed Matter Theory	9
R.G. for Molecular Spintronics	10
R.G. for Mechanical Control of Materials and Spin Systems	11
R.G. for Reactions Involving Heavy Nuclei	12
R.G. for Superheavy Elements	13
R.G. for Actinide Materials Science	14
R.G. for Condensed Matter Physics of Heavy Element Systems	15
R.G. for Hadron Physics	16
R.G. for Bioactinide	17
R.G. for Radiation and Biomolecular Science	18
R.G. for Spin-Polarized Positron Beam	19
Publication List	21
Appendix	26

Pictures on Cover Page:

- ① Potential energy of ^{180}Hg having the largest proton to neutron ratio among isotopes whose fission property was measured so far.
- ② Czochralski-pulling method and a single crystal of high-quality URu_2Si_2 .
- ③ Differential DBAR spectra of the Fe, Co, Ni and Gd samples obtained in the external magnetic field of 1 T at room temperature.
- ④ Schematic illustration of electrons' trajectories under mechanical rotation Ω and a magnetic field B . The circular spin current is generated in the uniformly rotating body.
- ⑤ TEM image of yeast cells after exposure to 1×10^{-4} mole/L Ce solution. CePO_4 nano minerals were developed directly from cell surface.
- ⑥ 1st ASRC international workshop held in February 2011: Discussions at coffee break.

