

Carolina International Symposium on Neutrino Physics 2008

Journal of Physics: Conference Series Volume 173

**Columbia, South Carolina, USA
15-17 May 2008**

Editors:

**Frank Avignone
Richard Creswick**

**Kuniharu Kubodera
Milind Purohit**

ISBN: 978-1-61738-310-6

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com

Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2008) by the Institute of Physics
All rights reserved.

Printed by Curran Associates, Inc. (2010)

For permission requests, please contact the Institute of Physics
at the address below.

Institute of Physics
Dirac House, Temple Back
Bristol BS1 6BE UK

Phone: 44 1 17 929 7481
Fax: 44 1 17 920 0979

techtracking@iop.org

TABLE OF CONTENTS

Some Practical Applications of Dark Matter Research	1
<i>L Stodolsky</i>	
SNO and the New SNOLAB	8
<i>A B McDonald</i>	
Testing Relativity with Neutrinos	17
<i>Brett Altschul</i>	
Searches on Neutrino Physics with Cryogenic Detectors	22
<i>Ettore Fiorini</i>	
The Deep Underground Science and Engineering Laboratory at Homestake	32
<i>K T Lesko</i>	
Opportunities for Neutrino Physics at the Spallation Neutron Source (SNS)	41
<i>Yu Efremenko, W R Hix</i>	
The MAJORANA Project	47
<i>S R Elliott, C E Aalseth, M Akashi-Ronquest, M Amman, J F Amsbaugh, F T Avignone III, H O Back, C Baktash, A Barabash, P Barbeau, J R Beene, M Bergevin, F E Bertrand, M Boswell, V Brudanin, W Bugg, T H Burritt, Y-D Chan, T V Cianciolo, J Collar, R Creswick, M Cromaz, J A Detwiler, P J Doe, J A Dunmore, Yu Efremenko, V Egorov, H Ejiri, J Ely, J Esterline, H Farach, T Farmer, J Fast, P Finnerty, B Fujikawa, V M Gehman, C Greenberg, V E Guiseppe, K Gusev, A L Hallin, R Hazama, R Henning, A Hime, T Hossbach, E Hoppe, M A Howe, D Hurley, B Hyronimus, R A Johnson, M Keillor, C Keller, J Kephart, M Kidd, O Kochetov, S I Konovalov, R T Kouzes, K T Lesko, L Leviner, P Luke, S MacMullin, M G Marino, A B McDonald, D-M Mei, H S Miley, A W Myers, M Nomachi, B Odom, J Orrell, A W P Poon, G Prior, D C Radford, J H Reeves, K Rielage, N Riley, R G H Robertson, L Rodriguez, K P Rykaczewski, A G Schubert, T Shima, M Shirchenko, V Timkin, R Thompson, W Tornow, C Tull, T D Van Wechel, I Vanyushin, R L Varner, K Vetter, R Warner, J F Wilkerson, J M Wouters, E Yakushev, A R Young, C-H Yu, V Yumatov, Z-B Yin</i>	
NEMO 3 Double Beta Decay Experiment: Latest Results	56
<i>A Barabash</i>	
The MOON Project and DBD Matrix Elements	66
<i>H Ejiri</i>	
Anatomy of Double Beta Decay Nuclear Matrix Elements	75
<i>Petr Vogel</i>	
Nuclear-Structure Corrections to the Double-Beta-Decay Operator	82
<i>Jonathan Engel</i>	
Nuclear Matrix Elements for Double Beta Decay in the QRPA Approach: A Critical Review	89
<i>Oswaldo Civitarese, Jouni Suhonen</i>	
Are Neutrinos Their Own Antiparticles?	96
<i>Boris Kayser</i>	
CN Neutrinos and the Sun's Primordial Core Metallicity	104
<i>Wick Haxton</i>	
Unconventional Applications of the Ge Detector and the Axion	115
<i>F T Avignone III</i>	
Direct Determination of Neutrino Mass	124
<i>R G H Robertson</i>	
Searching for Physics Beyond the Standard Model with Accelerator Neutrino Experiments	130
<i>William C Louis</i>	
Neutrinos and Cosmology: A Lifetime Relationship	139
<i>Pasquale D Serpico</i>	
The Mysterious Disappearance of Ettore Majorana	149
<i>Barry R Holstein</i>	
Some Aspects of Classical and Quantum Phases	155
<i>Yakir Aharonov, Tirza Kaufherr, Shmuel Nussinov</i>	
IceCube Science	161
<i>Francis Halzen</i>	
New Approaches to Dark Matter and Neutrino Detection	180
<i>J Collar</i>	
Double Chooz and the Search for Short Range Anti-Neutrino Oscillations	186
<i>Francis X Hartmann</i>	
First Results of the ANTARES Neutrino Telescope	195
<i>C Bigongiari</i>	

Concluding Remarks: Neutrino Mixing, Majorana CP-Violation, $(\beta\beta)0\nu$ -Decay and Beyond 205

S T Petcov

Author Index