Dirk Dubbers

1. Recent publications

Generation of narrow peaks in charged-particle magnetic spectroscopy
D.Dubbers
http://arxiv.org/abs/1508.02880v2

Magnetic guidance of charged particles
D.Dubbers
Physics Letters B 748, 306 (2015) doi.org/10.1016/j.physletb.2015.07.004

http://dx.doi.org/10.1016/j.physletb.2015.07.004 Generalized spin precession equations
H.-J. Stöckmann, D. Dubbers
New J. Phys., 16, 053050 (2014) doi.org/10.1088/1367-2630/16/5/053050

The present status of particle physics with slow neutrons
D. Dubbers
Physics Procedia 51, 13 (2014) doi.org/10.1016/j.phpro.2013.12.005

The point spread function of electrons in a magnetic field
D. Dubbers, L. Raffelt, B. Märkisch, F. Friedl, H. Abele
Nucl. Instr. Meth. A 763, 112 (2014) doi.org/10.1016/j.nima.2014.06.020

Summary: Next generation experiments on the neutron lifetime
D. Dubbers, K.S. Kumar, J.M. Pendlebury
Workshop Santa Fe, New Mexico, 2012, World Scientific 2014 doi.org/10.1142/9789814571678_0017

Quantum Physics: The Bottom-Up Approach
From the Simple Two-Level System to Irreducible Representations
Dirk Dubbers, Hans-Jürgen Stöckmann
Springer, Heidelberg 2013 doi:10.1007/978-3-642-31060-7

Neutron Decay with PERC: a Progress Report
G. Konrad et al., (The Perc collaboration)
J. Phys.: Conf. Ser. 340 012048 (2011) http://dx.doi.org/10.1088/1742-6596/340/1/012048

Ultra cold neutron quantum states
I. Antoniadis, S. Baessler, O. Bertolami, D. Dubbers, A. Meyerovich, V. Nesvizhevsky, K. Protasov, S. Reynaud
Workshop Les Houches, France (2011) http://dx.doi.org/10.1016/j.crhy.2011.09.001

The neutron and its role in cosmology and particle physics
D. Dubbers, M. Schmidt
Rev. Mod. Phys. 83, 1111 (2011) doi:10.1103/RevModPhys.83.1111

2. Older selected papers

PERC, a clean, bright, and versatile source of neutron decay products
D. Dubbers, H. Abele, S. Baeßler, B. Märkisch, M. Schumann, T. Soldner, O. Zimmer
Nucl. Instr. Meth. A 596, 238-247 (2008) doi:10.1016/j.nima.2008.07.157, arXiv:0709.4440

Quark mixing, CKM unitarity
H. Abele, E. Barberio, D. Dubbers, F.Glück, J.C. Hardy, W.J. Marciano, A. Serebrov, N. Severijns
Eur. Phys. J. C 33, 1 (2004) http://dx.doi.org/10.1140/epjc/s2003-01574-8

Is the unitarity of the quark-mixing CKM matrix violated in neutron beta-decay?
H. Abele, M. Astruc Hoffmann, S. Baeßler, D. Dubbers, F. Glück, U. Müller, V. Nesvizhevsky, J. Reich, O. Zimmer
Phys. Rev. Lett. 88, 211801 (2002) doi:10.1103/PhysRevLett.88.211801

A long ballistic supermirror guide for cold neutrons at the ILL
H. Häse, A. Knöpfler, K. Fiederer, U. Schmidt, D. Dubbers, W. Kaiser
Nucl. Instr. Meth. 485, 453 (2002) http://dx.doi.org/10.1016/S0168-9002(01)02105-2

^{3}He Spin Echo: New atomic beam technique for probing phenomena in the neV range
M. DeKieviet, D. Dubbers, C. Schmidt, D. Scholz, U. Spinola
Phys. Rev. Lett. 75, 1919 (1995) doi:10.1103/PhysRevLett.75.1919

Geometric phases and hidden symmetries in simple resonators
H.-M. Lauber, P. Weidenhammer, D. Dubbers
Phys. Rev. Lett. 72, 1004 (1994) doi:10.1103/PhysRevLett.72.1004

Spontaneous polarization of particles
U. Schmidt, G. Baum, D. Dubbers
Phys. Rev. Lett. 70, 3396 (1993) doi:10.1103/PhysRevLett.70.3396

On the origin of the 17 keV neutrino signals, and a loss-free measurement of the ^{35}S β-spectrum
H. Abele, G. Helm, U. Kania, C. Schmidt, J. Last, D. Dubbers
Phys. Lett. B 316, 26 (1993) doi:10.1016/0370-2693(93)90652-X

A new experimental limit on neutron-antineutron transitions
M. Baldo-Ceolin, et al.
Phys. Lett. B 236, 95 (1990) doi:10.1016/0370-2693(90)90601-2

Pulsed-beam neutron-lifetime measurement
J. Last, M. Arnold, J. Döhner, D. Dubbers, S. J. Freedman
Phys. Rev. Lett. 60, 995 (1988) doi:10.1103/PhysRevLett.60.995

Manifestation of Berry's topological phase in neutron spin rotation
T. Bitter, D. Dubbers
Phys. Rev. Lett. 59, 251 (1987) doi:10.1103/PhysRevLett.59.251

Dressed neutrons
E. Muskat, D. Dubbers, O. Schärpf
Phys. Rev. Lett. 58, 2047 (1987) doi:10.1103/PhysRevLett.58.2047

Beta-decay asymmetry of the neutron and g_A/g_V
P. Bopp, D. Dubbers, L. Hornig, E. Klemt, J. Last, H. Schütze, S. J. Freedman, O. Schärpf
Phys. Rev. Lett. 56, 919 (1986) doi:10.1103/PhysRevLett.56.919

The gradient elastic constant C_{44} of CaF_2: a measurement of extremely small quadrupole coupling constants in a solid
D. Dubbers, H. Vogt, and A. Winnacker
Phys. Lett. A 99, 236 (1983) doi.org/10.1016/0375-9601(83)90915-5

Irreducible spin precession theory applied to some topics in atomic and nuclear radio-frequency spectroscopy
D. Dubbers
Z. Phys. A 293, 211 (1979) doi.org/10.1007/BF01435590

Multiple quantum NMR transitions of ^{8}Li ($T_{1/2}$ = 0.84 s) in $LiTaO_3$ and the quadrupole moment of ^{8}Li
D. Dubbers, K. Dörr, H. Ackermann, F. Fujara, H. Grupp, M. Grupp, P. Heitjans, A. Körblein, H. J. Stöckmann
Z. Phys. A 282, 243 (1977) doi:10.1007/BF01414890

Sign of nuclear electric quadrupole coupling constants in solids from γ-ray anisotropy
D. Dubbers, H. Ackermann, M. Grupp, P. Heitjans, and H.-J. Stöckmann
Z. Phys. B 25, 363 (1976) doi.org/10.1007/BF01315252

Nuclear reorientation in static and radio-frequency electro-magnetic fields
D. Dubbers
Z. Phys. A 276, 245 (1976) doi.org/10.1007/BF01412102

3. Selected papers of group members

Gravity resonance spectroscopy constrains dark energy and dark matter scenarios
T. Jenke, G. Cronenberg, J. Burgdörfer, L. A. Chizhova, P. Geltenbort, A. N. Ivanov, T. Lauer, T. Lins, S. Rotter, H. Saul, U. Schmidt, H. Abele
Phys. Rev. Lett. 112, 151105 (2014) doi.org/10.1103/PhysRevLett.112.151105
+ Physics Viewpoint: Neutrons Knock at the Cosmic Door http://link.aps.org/doi/10.1103/Physics.7.39

New limit on Lorentz-Invariance- and CPT-violating neutron spin interactions
F. Allmendinger, W. Heil, S. Karpuk, W. Kilian, A. Scharth, U. Schmidt, A. Schnabel, Yu. Sobolev, K. Tullney
Phys. Rev. Lett. 112, 100801 (2014) doi.org/10.1103/PhysRevLett.112.110801

Weak Axial Vector Coupling $\lambda=g_A/g_V$ from the Beta Asymmetry A in Neutron Beta Decay
D. Mund, B. Märkisch, M. Deissenroth, J. Krempel, M. Schumann, H. Abele, A. Petoukhov, T. Soldner
Phys. Rev. Lett. 110, 172502 (2013) doi:10.1103/PhysRevLett.110.172502

PT quantummechanics
C.M.Bender, M. DeKieviet, S.P.Klevansky
Phil. Trans. R. Soc. A 371, 20120523 (2013) doi.org/10.1098/rsta.2012.0523

Constraints on Spin-Dependent Short-Range Interaction between Nucleons
K. Tullney, F. Allmendinger, M. Burghoff, W. Heil, S. Karpuk, W. Kilian, S. Knappe-Gruneberg, W. Müller, U. Schmidt, A. Schnabel, F. Seifert, Yu. Sobolev, L. Trahms
Phys. Rev. Lett. 111, 100801 (2013) doi.org/10.1103/PhysRevLett.111.100801

Enhancement of Blackbody Friction due to the Finite Lifetime of Atomic Levels
G. Łach, M. DeKieviet, U.D. Jentschura
Phys. Rev. Lett. 108, 043005 (2012) doi.org/10.1103/PhysRevLett.108.043005

The ^{10}B based Jalousie neutron detector
M. Henske, M. Klein, M. Köhli, P. Lennert, G. Modzel, C.J. Schmidt, U. Schmidt
Nucl. Instr. and Meth. A 686 (2012) 151-155 doi:10.1016/j.nima.2012.05.075

High frequency intensity oscillations at RESEDA using the CASCADE detector
W. Häussler, P. Böni, M. Klein, C.J. Schmidt, U. Schmidt, F. Groitl, J. Kindervater
Rev. Sci. Instr. 82, 045101 (2011) doi:10.1063/1.3571300

Massive spin-momentum entanglement measured in an atomic beam spin echo experiment
F. Jeske, Th. Stöferle, M. DeKieviet
Eur. Phys. J. D 63, 25 (2011) Eur. Phys. J. D doi.org/10.1140/epjd/e2011-10705-4

Limit on Lorentz and CPT violation of the bound neutron using a ^{3}He/^{129}Xe comagnetometer
C. Gemmel, W. Heil, S. Karpuk, K. Lenz, Yu. Sobolev, K. Tullney, M. Burghoff, W. Kilian, S. Knappe-Grüneberg, W. Müller, A. Schnabel, F. Seifert, L. Trahms, U. Schmidt
Phys. Rev. D 82, 111901(R) (2010) doi:10.1103/PhysRevD.82.111901

The new neutron decay spectrometer PERKEO III
B. Märkisch, H. Abele, D. Dubbers, F. Friedl, A. Kaplan, H. Mest, M. Schumann, T. Soldner, D. Wilkin
Nucl. Instr. Meth. A 611 (2009) 216-218 doi:10.1016/j.nima.2009.07.066

Stability of Berry's Phase for a Spin-1/2 Particle
S. Filipp, J. Klepp, Y. Hasegawa, C. Plonka-Spehr, U. Schmidt, P. Geltenbort, H. Rauch
Phys. Rev. Lett 102 030404 1-4 (2009) doi:10.1103/PhysRevLett.102.030404

Parity violation in hydrogen and longitudinal atomic beam spin echo I
T Bergmann, M. DeKieviet, T. Gasenzer, O. Nachtmann, M.-I. Trappe
Eur. J. D 54 551 (2009) doi.org/10.1140/epjd/e2009-00179-4

Scalar Casimir-Polder forces for uniaxial corrugations
B. Dobrich, M. DeKieviet, H. Gies
Phys. Rev. D 78 125022 (2008) doi:10.1103/PhysRevD.78.125022

The neutron. Its properties and basic interactions
H. Abele
Prog. Part. Nucl. Phys 60, 1-81 (2008) doi:10.1016/j.ppnp.2007.05.002

Measurement of the Proton Asymmetry Parameter C in Neutron Beta Decay
M. Schumann, M. Kreuz, M. Deissenroth, F. Glück, J. Krempel, B. Märkisch, D. Mund, A. Petoukhov, T. Soldner, H. Abele
Phys. Rev. Lett. 100, 151801 (2008) doi:10.1103/PhysRevLett.100.151801

Measurement of the Neutrino Asymmetry Parameter B in Neutron Decay
M. Schumann, T. Soldner, M. Deissenroth, F. Glück, J. Krempel, M. Kreuz, B. Märkisch, D. Mund, A. Petoukhov, H. Abele
Phys. Rev. Lett. 99, 191803 (2007) doi:10.1103/PhysRevLett.99.191803

New CP-Violation and Preferred-Frame Tests with Polarized Electrons
B. R. Heckel, C. E. Cramer, T. S. Cook, E. G. Adelberger, S. Schlamminger, U. Schmidt
Phys. Rev. Lett. 97, 021603 (2006) doi:10.1103/PhysRevLett.97.021603

Experimental observation of quantum reflection far from threshold
V. Druzhinina, M. DeKieviet
Phys. Rev. Lett. 91, 193202 (2003) doi:10.1103/PhysRevLett.91.193202

Neutron resonance spin echo using spin echo correction coils
W. Häussler, U. Schmidt, G. Ehlers, F. Mezei
Chemical Physics 292 (2003) 501-510 doi:10.1016/S0301-0104(03)00119-8

Quantum states of neutrons in the Earth's gravitational field
V. Nesvizhevsky, H. Börner, A. Petukhov, H. Abele, S. Baeßler, F. Rueß, T. Stöferle, A. Westphal, et al.
Nature 415 299 (2002) doi:10.1038/415297a

A long ballistic supermirror guide for cold neutrons at the ILL
H. Häse, A. Knöpfler, K. Fiederer, U. Schmidt, D. Dubbers, W. Kaiser
Nucl. Instr. Meth. 485, 453 (2002) doi:10.1016/S0168-9002(01)02105-2

Submillimeter Test of the Gravitational Inverse-Square Law
C. D. Hoyle, U. Schmidt, B. R. Heckel, E. G. Adelberger, J. H. Gundlach, D. J. Kapner, H. E. Swanson
Phys. Rev. Lett. 86, 1418-1421 (2001) doi:10.1103/PhysRevLett.86.1418

Neutron polarisation induced by radio frequency radiation
U. Schmidt, H. Abele, A. Boucher, P. Geltenbort, M. Klein, C. Stellmach
Phys. Rev. Lett. 84, 3270 (2000) doi:10.1103/PhysRevLett.84.3270