

CURRICULUM VITA

RAGHAVAN, Ramaswamy S. (Raju)

Honors

Fellow, American Physical Society
 Distinguished Scientist Award of the American Chapter of the Indian Physics Association
 Distinguished Member Award for Sustained Excellence, Bell Laboratories
 Invitation Fellow, Japan Society for Promotion of Science

Education

Ph. D. (Physics/Nuclear Physics) Purdue University, Lafayette, IN USA (1962-64)
 M. Sc. (Physics/X-ray Crystallography) University of Madras, India (1957-58)
 M. A. (Physics) University of Madras, India (1954-57)

Academic Positions

Professor of Physics, Virginia Tech, Blacksburg VA (July 2004-)
 Consulting Scientist, Bell Labs & LNGS, Gran Sasso, Italy (2001-2003)
 Distinguished Member, Bell Labs, Lucent Tech., Murray Hill NJ (1989-2001)
 Member of Technical Staff, AT&T Bell Labs, Murray Hill NJ (1972-89)
 Research Scientist, Physics-Dept., Technical University Munich, Germany (1967-72)
 Visiting Professor, University of Bonn, Germany (1966-67)
 Research Fellow, Bartol Research Foundation, Swarthmore, PA. (1965)
 Research Assistant, Dept. of Physics, Purdue University, Lafayette, IN (1962-64)
 Junior Research Associate, Tata Institute of Fundamental Research, Bombay, India (1959-61)

Academic Activity

Director, Institute of Particle, Nuclear and Astronomical Sciences, Virginia Tech (2004-)
 Spokesman, Int. Collaboration LENS-Sol/Cal (2004-)
 Co-Spokesman, Int. Collaboration BOREXINO @ Gran Sasso Italy (1988- 1997)
 Member, International Advisory Committee:
 NEUTRINO-06, Los Alamos, June 2006
 Neutrino Science: Neutrino Geophysics, Honolulu, HI, Dec. 2005, Paris 2007.
 Low Energy Solar Neutrinos (LowNu): Paris (2003), Heidelberg (2002), Sudbury (2000),
 Non-accelerator Particle Physics, Bangalore, 1994
 Hyperfine Interactions Prague (1989), Bangalore (1986), Groningen (1983), Berlin (1980)
 Co-Chairman, IV Int.Conference on Hyperfine Interactions, Madison NJ (1977).
 Associate Editor, "Hyperfine Interactions" Journal (Balzer) (1983-90)
 Associate of the Graduate Faculty, Rutgers University (1974-87)

Research Milestones

Particle Physics, Astrophysics (1975-)

Central Theme—Low Energy Neutrino Physics & Astrophysics

Novel Ideas & Proposals, Research Milestones

- Hypersharp Neutrino Lines—Laboratory probe for Planck Length (2008)
- Hypersharp Resonant Capture of Antineutrinos(2008)
- Successful operation of Borexino: First real time detection of ^7Be solar neutrinos (2007)
- Detecting active-sterile neutrino oscillations in LENS (2006)
- Recoilless resonant capture of Neutrinos and applications to Neutrino oscillation science in laboratory scale baselines (2006)
- Direct measurement of pp thermonuclear fusion and of the central temperature of the sun via LENS-Sol (2006)
- Real time spectroscopy of pp solar neutrinos by tagged neutrino capture in Indium and other targets (1998): **Founded LENS** R&D Project in Europe, U.S.1999), LENS-Sol (Russia, U.S). 2004
- Global measurement of the earth's radioactivity by antineutrino spectroscopy in Borexino & KamLand (1998)
- Low threshold taggable inverse- β reactions in Yb, Gd and Se for detecting pp neutrinos from the sun (1997)
- New approach to neutrinoless double β -decay using ton-scale Xe gas dissolved in liquid scintillator (1990, 1993).
- High resolution LiF cryogenic bolometry of low energy solar neutrinos via neutral and charged current neutrino reactions in ^7Li (1993).
- Deep search for neutrino magnetic moment via scattering of antineutrinos from megacurie Strontium-90 source using BOREXINO (1990).
- Concepts for detector design, signal and background in real-time spectroscopy of low energy solar neutrinos via electron scattering in a massive liquid scintillator (1987); **Founded BOREXINO** Project @ Gran Sasso (1989)
- Determination of neutrino mass from laser spectroscopy of the kinematics of bound state beta decay in tritium (1987)
- Neutral current excitation of nuclear states in ^{11}B as a method for detecting solar neutrinos of all flavors (1986); BOREX project (1988).
- Liquid Argon detector for neutrinos from astrophysical and accelerator sources (the future ICARUS project) (1979, 1986)
- Chromium-51 source as a direct calibrator of low energy solar neutrino experiments (1978)
- Tagged neutrino capture in Indium—first proposal for real-time spectroscopy of pp and other low energy solar neutrinos (1976) (future LENS Project)
- Diverse theoretical ideas & proposals in non-standard neutrino phenomenology:
 - Spin Flavor Precession of Low Energy Solar Neutrinos (2005)
 - New Model for Solar Neutrinos in manifest violation of CPT Invariance (2003)
 - Probing non-standard interactions of ν_τ via electron scattering of monoenergetic ^7Be solar neutrinos (2002)
 - Solar anti- ν_e by vacuum oscillation of anti- ν_μ after spin-flavor conversion via transition magnetic moment of ν_e (1991)
 - Solar anti- ν_e from ν_μ -decay after matter conversion $\nu_e \rightarrow \nu_\mu$ (1988)

Experimental Innovations for Neutrino Science and Technology

- Feasibility of LENS (background, scintillator, detector design); NSF Funding (2006)
 - Scintillation Lattice Chamber for large scale scintillation detectors with 3-d event location for LENS(2005, 1990).
 - HSD-Hyper Scintillation Detector for particle physics, geophysics and cosmology (2004)
 - New low detector-mass designs for Indium based LENS/Sol—measuring the neutrino luminosity of the sun (2004-)
 - Chemical recipe for In loaded liquid scintillator with high transparency and light efficiency and other innovations towards feasibility of the In pp neutrino detector (2001-)
 - General chemical method for liquid scintillators loaded with metal targets (In, Pb, Ce, Gd, Yb) (1997-2000) suitable for astroparticle physics experiments (US Patent)

“Ultra”-techniques for Astro-Particle Science

- Novel neutron activation techniques for ultratrace 10^{-16} g/g determination of U and Th (1999, 1988).
- Solid column chromatography for ton-scale ultrapurification of natural radioactivity in organic liquid scintillator materials (1995)
- Test milestones on ultrapurity in organic liquids met in first results from 5-ton prototype BOREXINO-CTF in Gran Sasso (1995)
- Radioactive tracer methods for quantifying contamination & ultrapurification of organic liquids (1989-1993); First results for conceptual feasibility overcoming background in the detection of low energy solar neutrinos—conceptual foundation for Borexino and Kamland..

Microelectronics Device Technology (1994-2000)

- Ultrasensitive tracer diagnostic techniques for tracking metal contamination in V-/ULSI device fabrication (wet chemical processing in photolithography) and application to the “Na problem” (**Patent**).

Nuclear Physics (1959-1985)

- New experimental methods for observing magnetic and quadrupole interactions of nuclear isomers produced in radioactivity and pulsed heavy-ion reactions
- Search and discovery of numerous nuclear isomers excited in (pulsed) heavy ion reactions
- Measurement of magnetic moments of specific isomers—test of effective moment theories
- Measurement of quadrupole moments in the g9/2 shell- test of effective charge theories

Condensed Matter Physics (1961-85)

- Charge and spin distributions in metals and ultra-dilute alloys; Nuclear quadrupole interactions and magnetic hyperfine fields detected by isomeric nuclear probes
- Moessbauer Effect: Observation of the high-resolution Moessbauer resonance in Germanium-73 (1974).
- Crystallography: Solving the Phase Problem in crystal structure analysis by Moessbauer diffraction (1961).

Documentation

• Patents

1. Chandross & Raghavan, **US Patent # 7332627** Compositions comprising solvated metals (Filed 2004 awarded 2008)
2. Chandross & Raghavan, **US Patent #: 6809210** New methods for high metal content loaded liquid scintillators (Filed 2002, awarded 2004)
3. Obeng, Opila & Raghavan, **US Patent #: 6133158** Impurity control in photolithography in CMOS device fabrication (Filed 1998, awarded 2000)

• Publications

4. Hypersharp Resonant Capture of Neutrinos as a Laboratory Probe of the Planck Length, **Phys. Rev. Letters** (in Press)
5. Direct Measurement of the ^7Be solar Neutrino Flux with 192 day Borexino Data, Borexino Collaboration, **Phys. Rev. Letters** ,**101**, **2008**
6. Borexino Detector at LNGS Borexino Collaboration, sub NIMA arXiv:0806.2400
7. Search for solar axions emitted in the M1-transition of $^7\text{Li}^*$ with Borexino **CTF EPS Journal C54 61 (2008)**
8. Study of phenylxylylethane (PXE) as scintillator for low energy neutrino experiments, Borexino Collaboration, **Nucl.Inst.Meth.A 585 48(2008)**
9. Pulse-shape discrimination with the counting test facility. (Borexino Collaboration), **Nucl.Instrum.Meth.A584:98-113 (2008)**
10. First real time detection of ^7Be solar neutrinos in Borexino, Borexino Collaboration **Physics Letters B 658, 101 (2007)**
11. Probing active-sterile neutrino oscillations in the LENS detector, C. Grieb, J. Link and R. S. Raghavan hep-ph/0611178 (**Phys. Rev. D 75.093006 (2007)**)
12. Probing the temperature profile of energy generation in the Sun, C.Grieb and R. S. Raghavan, hep-ph/0609 (**Phys. Rev. Letters 98,141 (2007)**)
13. Neutrino Geophysics, R. S. Raghavan **J. Phys (Nuc. & Particle Phys). 2007**
14. CNO and pep neutrino spectroscopy in Borexino: measurement of the cosmogenic c-11 background with the counting test facility, Borexino Collaboration (M. Balata et al.). **Phys. Rev. C74, 045805 (2006)** 6pp. e-Print Archive: hep-ex/0601035
15. Search for electron antineutrino interactions with the borexino counting test facility at gran sasso, Borexino Collaboration (M. Balata et al.).**European Phys. J. C47, 21 (2006).**
16. C-11 Measurement and CNO and pep fluxes at Borexino. Borexino Collaboration **Nucl.Phys. 145:29,2005**
17. LENS-Sol: Measuring the Neutrino Luminosity of the Sun, H. Back et al (LENS-Sol Collaboration), Proc. NOON-5, Y. Suzuki et al Eds. **2005**
18. Low Energy Solar Neutrinos and Spin Flavor Precession” B.C. Chauhan, J. Polido and R. S. Raghavan, “hep-ph/0504069 , **JHEP (2005)**
19. New experimental limits on violations of the Pauli Exclusion Principle obtained with the Borexino Counting Test Facility,” Borexino Collaboration, **Eur.Phys.J.C37(2004) 421-431: hep-ph/ 0406252**
20. New experimental limits on heavy neutrino mixing in ^8B decay obtained with the Borexino Counting Test Facility. Borexino Collaboration, **JETP Lett.78:261, 2003,**
21. Limits on Nucleon Decay from Borexino CTF, H.Back et al (Borexino Collaboration)

- Phys. Lett. B563, 23, 2003**
22. Study of neutrino electromagnetic properties with the prototype of Borexino detector, H. Back et al (Borexino Collaboration) **Phys.Lett B563, 35, 2003.**
 23. A New Model of Solar Neutrinos in Manifest violation of CPT Invariance R.S. Raghavan, *J. Cosmo. & Astroparticle Physics* 08(2003)002, (astro-ph/ 0304331)
 24. Probing Non-Standard Couplings of Neutrinos at the Borexino Detector, Z. Berezhiani, R. S. Raghavan and A..Rossi, **Nucl. Phys A638, 62 (2002)** (hep-ph/0111138)
 25. Measurements of extremely low radioactivity in BOREXINO. (Borexino Collaboration). **hep-ex/0109031; Astroparticle Physics**(In Press)
 26. Science and technology of BOREXINO: A real time detector for low energy solar neutrinos, G. Alimonti et al (BOREXINO Collab.), **Astroparticle Phys. 16, 205 (2002)**
 27. Light propagation in a large volume liquid scintillator G. Alimonti et al (Borexino Collaboration). **Nucl. Instr. Meth. A 440 (2000) 360**
 28. Gamow-Teller strengths of the inverse-beta transition $^{176}\text{Yb} \rightarrow ^{176}\text{Lu}$ for spectroscopy of proton-proton and other sub-MeV solar neutrinos, M. Fujiwara, H. Akimune, A. M. van den Berg, M. Cribier, I. Daito, H. Ejiri, H. Fujimara, Y. Fujita, C. D. Goodman, K. Ihara, T. Ishikawa, J. Jaeneche, T. Kawabata, R. S. Raghavan, K. Schwarz, M. Tanaka, T. Yamanaka, M. Yosoi and R. G. T. Zegers, **Phys. Rev. Letters 85, 4446 (2000).**
 29. A measurement of the Gamow-Teller strength for $^{176}\text{Yb} \rightarrow ^{176}\text{Lu}$ and the efficiency of a solar neutrino detector, M. Bhattacharya, C. D. Goodman, R. S. Raghavan, M. Palarczyk, A. Garcia, J. Rapaport, I. J. van Heerden, and P. Zupranski, **Phys. Rev. Letters 85,4442 (2000).**
 30. Measurement of the C-14 Abundance in a low background liquid scintillator G. Alimonti et al (BOREXINO Collab.), **Phys. Lett. B422, 349 (1998)**
 31. Ultra-low background measurements in a large volume underground detector, G. Alimonti et al (BOREXINO Collab.), **Astroparticle Phys. 8, 141 (1998).**
 32. A large-scale low background liquid scintillator detector: the counting test facility at Gran Sasso. G. Alimonti et al (BOREXINO Collab.), **Nucl. Inst. Meth. A406, 411 (1998).**
 33. Measurement of the global radioactivity in the Earth by multidetector antineutrino spectroscopy, R. S. Raghavan, S. Schoenert, S. Enomoto, J. Shirai, F. Suekane and A. Suzuki, **Phys. Rev. Letters 80, 635 (1998).**
 34. New prospects for real-time spectroscopy of low energy neutrinos from the sun, R. S. Raghavan, **Phys. Rev. Letters 78, 3618 (1997).**
 35. New possibilities for tagged real-time detection of sub-MeV electron neutrinos from the Sun, R. S. Raghavan, Proc. 4th Int. Conf. on Solar Neutrinos, W. Hampel, Ed. (1997), p. 248.
 36. “‘Back End’ Chemical Cleaning in Integrated Circuit Fabrication: A Tutorial”, Yaw S. Obeng and R. S. Raghavan, *Materials Research Society Symposium Proceedings*, **477 (1997).**
 37. Solar Neutrinos—From Puzzle to Paradox, R. S. Raghavan, **Science, 267,45 (1995)**
 38. A new approach to the search for neutrinoless double beta decay, R. S. Raghavan, **Phys.Rev. Letters 72, 1411 (1994).**
 39. Line spectroscopic approach to solar neutrinos by cryogenic bolometry of neutral and charged current reactions on ^7Li , R. S. Raghavan, P. Raghavan and T. Kovacs, **Phys. Rev. Letters 71, 4295 (1993).**

40. Direct Tests for solar neutrino mass, mixing and Majorana magnetic moment, R. S. Raghavan, A. B. Balantekin, F. Loreti, A. J. Baltz, S. Pakvasa and J. Pantaleone, **Phys. Rev. D44**, 3786 (1991).
41. Neutrino mass, mixing and magnetic moment: Status and future, R. S. Raghavan, Proc. 25 Int. Conf. High Energy Physics (Singapore) (Ed. Phua and Yamaguchi) Vol. I, **p482 (1991)**.
42. Borex: Solar neutrino experiment via weak neutral and charged currents in Boron-11, T. Kovacs, J. W. Mitchell, P. Raghavan, R. S. Raghavan, S. J. Freedman, J. Kay, C. E. Lane, R. Steinberg, C. Cattadori, A. Donati, S. Pakvasa, M. Deutsch, P. Rothschild, C. Arpasella, G. Bellini, S. Bonetti, M. Campanella, P. Inzani, I. Manno, E. Meroni, G. Rannucci, F. Ragusa, G. Cecchet, A. de Bari, M. Gallorini and A. Perotti, **Solar Physics 128**, 61 (1990).
43. Galactic supernova signal in Borex and measurement of ν_{μ} , ν_{τ} masses, A. Acker, S. Pakvasa and R. S. Raghavan, **Phys. Lett. B238**, 117 (1990).
44. Search for neutrons from d-d nuclear reactions in electrochemically charged Palladium, M. M. Broer, L. C. Feldman, A. C. W. P. James, J. S. Kraus and R. S. Raghavan, **Phys. Rev. C 40R**, 1559 (1989).
45. Neutral current excitation of nuclei by solar neutrinos, R. S. Raghavan, **Nucl. Phys. A478**, 779 (1988).
46. Probing the nature of the neutrino: The Boron solar neutrino experiment, R. S. Raghavan and S. Pakvasa, **Phys. Rev. D37**, 849 (1988).
47. Neutrino decay catalyzed by the MSW effect, R. S. Raghavan, X.G. He and S. Pakvasa, **Phys. Rev. D38**, 1378 (1988).
48. Hyperfine interactions research in the Mid-eighties, (Conf. Summary) R. S. Raghavan, **Hyp. Interactions 35**, 1075 (1987).
49. The Boron solar neutrino experiment, R. S. Raghavan, Proc. Telemark-IV Conf. on Neutrino Mass and Neutrino Astrophysics, (World Scientific) (1987).
50. Bound state β -decay and kinematic search for neutrino mass, S. G. Cohen, D. E. Murnick and R. S. Raghavan, **Hyp. Interactions 33**, 1 (1987).
51. Inverse beta-decay of ^{40}Ar : A new approach for observing MeV neutrinos from laboratory and astrophysical sources R. S. Raghavan, **Phys. Rev. D34**, 2088 (1986) [Updated and elaborated from #137 (1979)].
52. New tools for solving the solar neutrino problem, R. S. Raghavan, S. Pakvasa and B. A. Brown, **Phys. Rev. Lett. 57**, 1801 (1986).
53. Hyperfine Interaction Studies with Pulsed Heavy Ion Beams, (Review) P. Raghavan and R. S. Raghavan, **Hyp. Interactions 26**, 855 (1985).
54. E2 effective charges of $g_{9/2}$ nucleons derived from quadrupole moments of high-spin isomers in $^{88,90,91}\text{Zr}$ and $^{90,92,94}\text{Mo}$, P. Raghavan, M. Senba, Z. Z. Ding, A. Lopez-Garcia, B.A. Brown and R. S. Raghavan, **Phys. Rev. Lett. 54**, 2592 (1985).
55. Heavy-ion reactions in the study of hyperfine interactions in solids, (Review) R. S. Raghavan and P. Raghavan, **J. Phys. Soc. Japan, 54S** 146 (1985).
56. Nuclear g-factors of the $(17/2)^-$ and $(21/2)^-$ isomeric states of ^{91}Mo , P. Raghavan and R. S. Raghavan, **Phys. Rev. C27**, 1532 (1983).
57. Hyperfine field of Strontium nuclei in Nickel, P. Raghavan, Z. Z. Ding, R. S. Raghavan, **Hyp. Interactions 15**, 317 (1983).
58. The sign and magnitude of the EFG at Cd in Hf, E. N. Kaufmann, R. S. Raghavan, P. Raghavan, E. J. Ansaldo and R. A. Naumann, **Hyp. Interactions 9**, 289 (1981).

59. Electric field-gradients at Gallium in non-cubic metals: Role of the impurity valence, R. S. Raghavan and P. Raghavan, **Hyp. Interactions 9, 317 (1981)**.
60. Temperature dependence of the hyperfine field at Ga, Ge and As in fcc-Co, M. Senba, P. Raghavan and R. S. Raghavan, **Hyp. Interactions 9, 453 (1981)**.
61. Temperature dependence of hyperfine fields at Sn and Cd in Co: In-beam study, M. Senba, P. Raghavan, W. Semmler and R. S. Raghavan, **Hyp. Interactions 9, 449 (1981)**.
62. Temperature dependence of the electric field-gradient in metallic Tin: Test case for theory, W. Semmler, P. Raghavan and R. S. Raghavan, **Hyp. Interactions 9, 323 (1981)**.
63. HFI-V: A Summary, (Conf. Summary) R. S. Raghavan, **Hyp. Interactions 10, 1237 (1981)**.
64. Direct detection and spectroscopy of solar neutrinos using In, R. S. Raghavan, Proc. Neutrino '81, University of Hawaii Press, **1981**.
65. Nuclear excitation by positron annihilation: Theory vs. Experiment, R. S. Raghavan and A. P. Mills, **Phys. Rev. C24, 1814 (1981)**.
66. On the relationship of solar activity and the solar neutrino flux, L. J. Lanzerotti and R. S. Raghavan, **Nature 293, 122 (1981)**.
67. Temperature dependence of the quadrupole interaction of $^{69}\text{GeTi}$ and $^{113}\text{SnSn}$, W. Semmler, P. Raghavan, M. Senba and R. S. Raghavan, **Z. Phys. B45, 29 (1981)**.
68. Temperature anomalies of hyperfine fields of s-p impurity elements in Cobalt, P. Raghavan, M. Senba and R. S. Raghavan, **Phys. Rev. Lett. 39, 1547 (1978)**.
69. Quadrupole Interaction of ^{69}Ge in In, Sn, Sb, Tl and Bi, P. Raghavan and R. S. Raghavan, **Hyp. Interactions, 4, 569 (1978)**.
70. Search for an isotopic mass effect on the quadrupole coupling constants in non-cubic metals, R. S. Raghavan and P. Raghavan, **Hyp. Interactions 4, 535 (1978)**.
71. Temperature dependence of the hyperfine field at As in Ni, P. Raghavan, D. E. Murnick and R. S. Raghavan, **Hyp. Interactions 4, 326 (1978)**.
72. Hyperfine magnetic fields at ^{67}Ge in Fe, Co and Ni, P. Raghavan, M. Senba and R. S. Raghavan, **Hyp. Interactions 4, 335 (1978)**.
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74. Solar neutrino spectroscopy by inverse β -decay in Indium, R. S. Raghavan, Proc. Conf. Status and Future of Solar Neutrino Research, Brookhaven National Laboratory, BNL-5897, v.II, p.1 **(1978)**.
75. Indium loaded scintillator for low energy solar neutrino spectroscopy, L. N. Pfeiffer, A. P. Mills, R. S. Raghavan and E. Chandross, **Phys. Rev. Lett. 41, 63 (1978)**.
76. Heavy-ion excitation and spin precession of a new isomer of ^{72}As in Co and Ni, P. Raghavan, R. S. Raghavan and D. E. Murnick, **Phys. Rev. C15, 1593 (1977)**.
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78. Sign and magnitude of the quadrupole interaction of ^{111}Cd in non-cubic metals; Universal correlation of ionic and electronic field-gradients, P. Raghavan, E. N. Kaufmann, R. S. Raghavan, E. J. Ansaldo and R. A. Naumann, **Phys. Rev. B13, 2835 (1976)**.
79. Recent developments in the study of quadrupolar gradients in non-cubic metals: A Review, R. S. Raghavan, **Hyp. Interactions 2, 29 (1976)**.
80. Inverse β -decay of $^{115}\text{In} \rightarrow ^{115}\text{Sn}^*$: A new possibility for detecting solar neutrinos from the proton-proton reaction, R. S. Raghavan, **Phys. Rev. Lett. 37, 259 (1976)**.

81. Lifetime and g-factor results for the $(13/2)^-$ 1985 keV level in ^{91}Nb and the $(15/2)^-$ 2288 keV level in ^{91}Zr , C. V. K. Baba, D. B. Fossan, T. Faestermann, F. Feilitzsch, M. R. Maier, P. Raghavan, R. S. Raghavan and C. Signorini, **Nucl. Phys. A257, 135 (1976)**.
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84. Preferred sites of implanted impurities in Beryllium: Lattice location and quadrupole interactions, E. N. Kaufmann, P. Raghavan, R. S. Raghavan, E. J. Ansaldo and R. A. Naumann, **Phys. Rev. Lett. 34, 1558 (1975)**.
85. The Mossbauer effect of the 13.3 keV transition in ^{73}Ge , L. N. Pfeiffer, R. S. Raghavan, C. Lichtenwalner and A. G. Cullis, **Phys. Rev. B12, 4793 (1975)**.
86. Measurement of the g-factor in ^{94}Mo , T. Faestermann, F. Feilitzsch, R. S. Raghavan, C. Signorini, T. Yamazaki, C. V. K. Baba, D. B. Fossan and D. Proetel, **Z. Phys. A273, 157 (1975)**.
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88. g-Factor measurement of the 2593 keV state in ^{94}Mo , T. Faestermann, F. Feilitzsch, R. S. Raghavan, C. Signorini, T. Yamazaki, C. V. K. Baba, D. B. Fossan and D. Proetel, **J. Phys. Soc. Japan 34S, 261 (1974)**.
89. g and τ results for high-spin isomers in ^{91}Nb and ^{91}Zr , C. V. K. Baba, D. B. Fossan, T. Faestermann, F. Feilitzsch, M. R. Maier, P. Raghavan, R. S. Raghavan and C. Signorini, **J. Phys. Soc. Japan 34S, 260 (1974)**.
90. Observation of the high resolution Mossbauer resonance in ^{73}Ge , R. S. Raghavan and L. N. Pfeiffer, **Phys. Rev. Lett. 32, 512 (1974)**.
91. Temperature dependence of the quadrupole interaction of ^{111}Cd in Zn, R. S. Raghavan, P. Raghavan, E. N. Kaufmann, K. Krien and R. A. Naumann, **J. Phys. F 4, L80 (1974)**.
92. Temperature dependence of the impurity electric quadrupole interaction: Cd and Ta in Titanium, E. N. Kaufmann, P. Raghavan, R. S. Raghavan, K. Krien and R. A. Naumann, **Phys. Stat Solidi 63, 719 (1974)**.
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94. ^{73}Ge : A new high resolution Mossbauer nuclide, L. N. Pfeiffer and R. S. Raghavan, **J. Physique C35-36, 203 (1974)**.
95. Nuclear quadrupole interaction of the excited states of ^{117}In and ^{111}Cd in Cd compounds, R. S. Raghavan, P. Raghavan and J. M. Friedt, **Phys. Rev. Lett. 30, 10 (1973)**.
96. Time-differential PAC measurement of the hyperfine field of Hg in Iron, R. S. Raghavan, P. Raghavan, E. N. Kaufmann, K. Krien and R. A. Naumann, **Phys. Rev. B7, 4132 (1973)**.
97. Search for anomalous narrowing of the Moessbauer transition of ^{197}Au , L. Pfeiffer, R. S. Raghavan, C. P. Lichtenwalner and K. W. West, **Phys. Rev. Lett. 30, 635 (1973)**.
98. Observation of the sign of the nuclear quadrupole interaction by β - γ directional correlations, R. S. Raghavan, P. Raghavan and E. N. Kaufmann, **Phys. Rev. Lett. 31, 111 (1973)**.

99. Determination of the unique site population in various In implanted non-cubic metals using angular correlations and the nuclear quadrupole interaction, E. N. Kaufmann, P. Raghavan, R. S. Raghavan, K. Krien, E. J. Ansaldo and R. A. Naumann, Proc. Int. Conf. Applications of Ion-beams to Metals, Albuquerque, N. M. (Plenum) **1973**.
100. Anomalous temperature dependence of the quadrupole interaction in Cd, R. S. Raghavan and P. Raghavan, **Phys. Lett. 36A, 313 (1971)**.
101. Quadrupole moment of the 'rotational' state in ^{117}In R. S. Raghavan and P. Raghavan, **Phys. Rev. Lett. 28, 54 (1972)**.
102. Effect of high pressure on the quadrupole interaction in Cd metal measured by perturbed angular correlations, P. Raghavan, R. S. Raghavan and W. B. Holzapfel, **Phys. Rev. Lett. 28, 903 (1972)**.
103. Hyperfine field of ^{99}Te in Iron, P. Raghavan and R. S. Raghavan, **Z. Phys. 256, 309 (1972)**.
104. A new method for differential perturbed angular correlation measurements, R. S. Raghavan and P. Raghavan, **Nucl. Inst. Meth. 92, 435 (1971)**.
105. Decay of the first excited state at 13.3 keV in ^{73}Ge , R. S. Raghavan, **Z. Phys. 243, 441 (1971)**.
106. Perturbed angular correlations of ^{187}Re in Nickel, R. S. Raghavan and P. Raghavan, **Z. Phys. 244, 371 (1971)**.
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