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Curriculum Vitae

CURRENT POSITIONS

- ***Distinguished Professor, Physics Department, Texas A&M University.*** Responsible for teaching undergraduates and supervising graduate-student research, and for participating in the administrative activities of the physics department.
- ***Faculty Researcher and Group Leader, Cyclotron Institute, Texas A&M University.*** Leader of a research group, supported by the U.S. Department of Energy, studying properties of the weak interaction in nuclei.

PROFESSIONAL HISTORY

- 1965-67 Postdoctoral Research Fellow, Nuclear Structure Laboratory, Oxford University, England
1967-70 Miller Research Fellow, then Staff Physicist, Lawrence Berkeley Laboratory, California, USA
1970-74 Associate Research Officer, AECL, Chalk River Nuclear Laboratories (CRNL), Ontario, Canada
1974-83 Senior Research Officer, CRNL
1976-77 Scientific Associate, CERN, Geneva (sabbatical leave from CRNL)
1983-86 Head, Nuclear Physics Branch, CRNL
1986-97 Director, TASCC (Tandem Accelerator Superconducting Cyclotron) Division, CRNL
1987-97 Chair, National Board of Directors, Deep River Science Academy
1997-2006 Professor, Physics Department, Texas A&M University
1997- Faculty Researcher and Group Leader, Cyclotron Institute, Texas A&M University
2006- Distinguished Professor, Physics Department, Texas A&M University

EDUCATION

- 1961 B.Sc. (Honours Mathematics and Physics), McGill University, Montreal
1963 M.Sc. (Nuclear Physics), McGill University, Montreal
1965 Ph.D. (Nuclear Physics), McGill University, Montreal
Dissertation title: The $A=4k + 1$ Sequence of Delayed Proton Precursors
Supervisor: R.E. Bell FRS, FRSC

HONOURS, AWARDS, ETC.

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|---------|---|
| 1963-65 | National Research Council Studentship (McGill) |
| 1965 | D.W. Ambridge Prize (Outstanding McGill graduand with science Ph.D.) |
| 1965-67 | National Research Council Postdoctorate Overseas Fellowship (Oxford) |
| 1967-69 | Miller Fellowship for Basic Research (University of California, Berkeley) |
| 1976 | Herzberg Medal, Canadian Association of Physicists |
| 1976-77 | CERN Research Associateship |
| 1979 | Fellowship, Royal Society of Canada |
| 1981 | Rutherford Medal in Physics, Royal Society of Canada |
| 1983 | Fellowship, American Physical Society |
| 1992-95 | Vice President, Academy of Science, Royal Society of Canada |
| 2002-04 | Member, Executive Council, Nuclear Physics Division, American Physical Society |
| 2006 | Tom W Bonner Prize, American Physical Society |
| 2006 | Distinguished Achievement Award in Research, Association of Former Students, Texas A&M University |
| 2006 | Appointed Distinguished Professor by Texas A&M University |
| 2009-14 | Divisional Associate Editor, Physical Review Letters |
| 2014- | Member, DOE/NSF Nuclear Science Advisory Committee |

ASSOCIATIONS

Fellow, Royal Society of Canada
Member, Canadian Association of Physicists
Fellow, American Physical Society

PUBLICATIONS

1. DELAYED PROTON EMISSION FOLLOWING THE DECAY OF ^{17}Ne
R. McPherson, J.C. Hardy and R.E. Bell
Physics Letters **11** (1964)65.
2. DELAYED PROTONS FOLLOWING THE DECAY OF ^{29}S
J.C. Hardy and R.I. Verrall
Phys. Letters **13** (1964)148.
3. CALCIUM-37
J.C. Hardy and R.I. Verrall
Phys. Rev. Letters **13** (1964)764.
4. DELAYED PROTONS FOLLOWING ^{21}Mg AND ^{25}Si DECAY
R. McPherson and J.C. Hardy
Can. J. Phys. **43** (1965)1.
5. DELAYED PROTONS FOLLOWING THE DECAY OF ARGON-33
J.C. Hardy and R.I. Verrall

- Can. J. Phys. **43** (1965)418.
6. DECAY OF CARBON-9
J.C. Hardy, R.I. Verrall, R. Barton and R.E. Bell
Phys. Rev. Letters **14** (1965)376.
 7. LOG FT VALUES AND T=3/2 ANALOGUE STATES
J.C. Hardy and B. Margolis
Phys. Lett. **15** (1965)276.
 8. NEW INFORMATION ON THE EMISSION OF DELAYED PROTONS FOLLOWING THE DECAY OF
 ^{17}Ne , ^{21}Mg AND ^{25}Si
J.C. Hardy and R.E. Bell
Can J. Phys. **43** (1965)1671.
 9. SUPERALLOWED LOG FT VALUES FOR TRANSITIONS BETWEEN T=3/2 ANALOGUE STATES
J.C. Hardy, R.I. Verrall and R.E. Bell
Nucl. Phys. **81** (1966)113.
 10. AN IMPROVED NOMOGRAM FOR LOG FT VALUES
R.I. Verrall and J.C. Hardy
Nucl. Instr. & Methods **42** (1966)258.
 11. T=3/2 ANALOGUE LEVELS IN MASS 25 AND 29
J.C. Hardy and D.J. Skyrme
in *Isobaric Spin in Nuclear Physics*, Academic Press Inc., New York (1966) pg. 701.
 12. ENERGY LEVELS OF ^{38}Ca FROM THE REACTION $^{40}\text{Ca}(p,t)^{38}\text{Ca}$
J.C. Hardy, D.J. Skyrme and I.S. Towner
Phys. Lett. **23** (1966)487.
 13. EFFECTS OF A SPIN-DEPENDENT INTERACTION POTENTIAL IN THE DWBA ANALYSIS OF
TWO-NUCLEON TRANSFER REACTIONS
I.S. Towner and J.C. Hardy
Phys. Lett. **25B** (1967)98.
 14. DETERMINATION OF THE SIGNS OF SHELL-MODEL MATRIX ELEMENTS FROM TWO-
NUCLEON STRIPPING DATA
J.C. Hardy and I.S. Towner
Phys. Lett. **25B** (1967)577.
 15. ^{91}Y AND THE FAILURE OF THE CLOSED SHELL AT ^{88}Sr
J.C. Hardy, W.G. Davies and W. Darcey
Nucl. Phys. **A121** (1968)103.
 16. THE LOCATION AND ISOSPIN-FORBIDDEN ALPHA DECAY OF THE LOWEST T=2 STATE IN ^{28}Si
R.L. McGrath, J.C. Hardy and J. Cerny
Phys. Lett. **27B** (1968)443.
 17. CARBON-10 AND MASS MEASUREMENTS FOR LIGHT NUCLEI
H. Brunnader, J. C. Hardy and J. Cerny
Phys. Rev. **174** (1968)1247.

18. NEW NUCLIDES ^{19}Na AND ^{23}Al OBSERVED VIA THE $(p, ^6\text{He})$ REACTION
J. Cerny, R.A. Mendelson Jr., G.J. Wozniak, John E. Esterl and J.C. Hardy
Phys. Rev. Letters **22** (1969)612.
19. THE $^{31}\text{P}(t,p)^{33}\text{P}$ REACTION AND THE USEFULNESS OF DOUBLE-STRIPPING IN DISTINGUISHING AMONG SHELL-MODEL CALCULATIONS
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20. TABLES OF FRACTIONAL PARENTAGE COEFFICIENTS IN THE ISOSPIN FORMALISM FOR THE $J=3/2$ AND $5/2$ SHELLS
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21. ISOSPIN PURITY AND DECAY OF THE $T=3/2$ ANALOGUE STATE IN ^{17}F
J.C. Hardy, John E. Esterl, R.G. Sextro and J. Cerny
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22. ISOBARIC ANALOGUE STATES AND COULOMB DISPLACEMENT ENERGIES IN THE $(1d_{5/2})$ SHELL
J.C. Hardy, H. Brunnader, J. Cerny and J. Jaenecke
Phys. Rev. **183** (1969)854.
23. DIRECT TWO-NUCLEON TRANSFER REACTIONS AND THEIR INTERPRETATION IN TERMS OF THE NUCLEAR SHELL MODEL
I.S. Towner and J.C. Hardy
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24. A SIMPLE METHOD FOR INVESTIGATING THE PARENTAGE OF STATES USING TWO-NUCLEON TRANSFER REACTIONS
J.C. Hardy, H. Brunnader and J. Cerny
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25. ISOSPIN-FORBIDDEN DECAY PROPERTIES OF THE LOWEST $T=2$ STATES IN ^{20}Ne , ^{24}Mg , ^{28}Si , ^{32}S AND ^{40}Ca
R.L. McGrath, J. Cerny, J.C. Hardy, G. Goth and A. Arima
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26. ^{34}Ar AND $T=1$ STATES IN ^{34}Cl FROM TWO-NUCLEON PICKUP REACTIONS
H. Brunnader, J.C. Hardy and J. Cerny
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27. $T=2$ AND $T=3$ ANALOGUE STATES, $28 \leq A \leq 40$
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28. THE STRUCTURE OF ^{16}O AND THE $^{17}\text{O}(p,d)^{16}\text{O}$ REACTION
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29. THE $(^3\text{He}, ^6\text{He})$ REACTION ON ^6Li AND ^7Li

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30. TWO-NUCLEON TRANSFER REACTIONS WITH POLARIZED PROTONS
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31. ISOSPIN PURITY AND DELAYED PROTON DECAY: ^{17}Ne AND ^{33}Ar
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33. BETA-DELAYED PROTON DECAY OF ^{13}O : A VIOLATION OF MIRROR SYMMETRY
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34. SPIN-DEPENDENCE IN THE REACTIONS $^{16}\text{O}(p,t)^{14}\text{O}$ AND $^{16}\text{O}(p,^3\text{He})^{14}\text{N}$
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35. ISOSPIN MIXING AND β -DELAYED PROTON EMISSION
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36. FIRST FORBIDDEN NON-UNIQUE BETA TRANSITIONS AND MIRROR COMPARISONS IN LIGHT NUCLEI
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38. USE OF THE ($^7\text{Li},^7\text{Be}$) REACTION TO MEASURE THE MASS OF ^{26}Na
G.C. Ball, W.G. Davies, J.S. Forster and J.C. Hardy
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39. β -DELAYED PROTON DECAY OF ^9C
J.E. Esterl, D. Allred, J.C. Hardy, R.G. Sextro, J. Cerny
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40. MIRROR ASYMMETRY OF FERMI BETA DECAY
J.C. Hardy, H. Schmeing, J.S. Geiger, R.L. Graham and I.S. Towner
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41. TWO NUCLEON TRANSFER REACTIONS IN LIGHT NUCLEI
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42. A PROGRAM FOR NUCLEAR PHYSICS IN THE SEVENTIES AND BEYOND
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J.C. Hardy, A.D. Bacher, G.R. Plattner, J.A. Macdonald and R.G. Sextro
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44. NUCLEAR PARENTAGE SIMPLY OBTAINED FROM TWO-NUCLEON TRANSFER REACTIONS
J.C. Hardy, H. Brunnader and J. Cerny
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45. DELAYED PROTON AND ALPHA PRECURSORS
J.C. Hardy
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46. FERMI β -DECAY: THE HALF LIVES OF $^{26}\text{Al}^m$, ^{34}Cl , $^{38}\text{K}^m$ AND ^{42}Sc
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47. MASS AND β -DECAY OF ^{25}Ne , A $T_z = +5/2$ NUCLIDE
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48. A NEW $N=Z$ ISOTOPE: KRYPTON 72
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53. FERMI BETA DECAY: THE MASSES OF ^{22}Mg , ^{26}Si , ^{30}S AND ^{34}Ar
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54. ANALYZING POWERS FOR TWO-NUCLEON TRANSFER REACTIONS IN THE $1p$ SHELL

- J.A. Macdonald, Joseph Cerny, J.C. Hardy, H.L. Harney, A.D. Backer. and G.R. Plattner
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55. THE DECAY OF ^{34}Ar : A MIRROR COMPARISON OF SUPERALLOWED BETA DECAY
J.C. Hardy, H. Schmeing, J.S. Geiger and R.L. Graham
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56. USE OF THE $^{14}\text{C}(^{18}\text{O}, ^{12}\text{Be})^{20}\text{Ne}$ REACTION TO MEASURE THE MASS OF ^{12}Be
G.C. Ball, J.G. Costa, W.G. Davies, J.S. Forster, J.C. Hardy and A.B. McDonald
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57. A NEW DELAYED PROTON PRECURSOR: CHROMIUM 45
K.P. Jackson, J.C. Hardy, H. Schmeing, R.L. Graham, J.S. Geiger and K.W. Allen
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58. FERMI BETA DECAY, $A > 40$: THE MASSES OF ^{42}Sc , ^{36}V , ^{50}Mn AND ^{54}Co
J.C. Hardy, G.C. Ball, J.S. Geiger, R.L. Graham, J.A. Macdonald and H. Schmeing
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59. NUCLEAR SPECTROSCOPY FROM DELAYED-PARTICLE EMISSION
J.C. Hardy
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60. A LOW SPIN ISOMER IN ^{74}Br : ITS HALF-LIFE AND DECAY SCHEME
H. Schmeing, R.L. Graham, J.C. Hardy and J.S. Geiger
Nuclear Physics **A233** (1974)63.
61. FERMI BETA DECAY: $A > 40$: THE HALF-LIVES OF ^{46}V , ^{50}Mn AND ^{54}Co
J.C. Hardy, H.R. Andrews, J.S. Geiger, R.L. Graham, J.A. Macdonald and H. Schmeing
Phys. Rev. Lett. **33** (1974)1647.
62. SUPERALLOWED $0^+ \rightarrow 0^+$ NUCLEAR BETA DECAYS AND CHARGE DEPENDENT MIXING
J.C. Hardy, H.R. Andrews, G.C. Ball, J.S. Geiger, R.L. Graham, J.A. Macdonald, H. Schmeing and I.S. Towner
Proc. of Inter. Conf. on Nuclear Structure and Spectroscopy Amsterdam 9-13 Sept. 1974, pg. 485.
63. SUPERALLOWED NUCLEAR BETA DECAY
J.C. Hardy, H. Schmeing, J.S. Geiger, R.L. Graham and I.S. Towner
Bulletin of the Academy of Sciences USSR (Physical Series)**39** (1975)51.
64. THE DECAY OF ^{74}Kr
H. Schmeing, J.C. Hardy, R.L. Graham and J.S. Geiger
Nucl. Phys. **A242** (1975)232.
65. THE SUPERALLOWED BETA DECAY OF ^{18}Ne , ^{22}Mg , AND ^{26}Si
J.C. Hardy, H. Schmeing, J.S. Geiger and R.L. Graham
Nucl. Phys. **A246** (1975) 61.
66. DOES THE CABIBBO ANGLE SOMETIMES VANISH IN NUCLEAR BETA DECAY?
J.C. Hardy and I.S. Towner
Phys. Lett. **58B** (1975) 261.

67. SUPERALLOWED $0^+ \rightarrow 0^+$ NUCLEAR BETA DECAYS AND CABIBBO UNIVERSALITY
J.C. Hardy and I.S. Towner
Nucl. Phys. **A254** (1975) 221.
68. SUPERALLOWED BETA DECAY: FROM NUCLEAR MASSES TO THE Z VECTOR BOSON
J.C. Hardy and I.S. Towner
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69. MASSES OF $T_z = +5/2$ NUCLEI IN THE s-d SHELL FROM BETA-DECAY MEASUREMENTS
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J.C. Hardy, J.A. Macdonald, H. Schmeing, H.R. Andrews, J.S. Geiger, R.L. Graham, T. Faestermann, K.P. Jackson, E.T.H. Clifford
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J.C. Hardy, J.A. Macdonald, H. Schmeing, T. Faestermann,
H.R. Andrews, J.S. Geiger, R.L. Graham and K.P. Jackson
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72. FROM PEAKS TO CONTINUA: THE STUDY OF DELAYED PROTON DECAY AMONG LIGHT NUCLEI ($A < 100$)
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73. A FAST TAPE TRANSPORT SYSTEM FOR USE WITH ON-LINE SEPARATORS
J.A. Macdonald, J.C. Hardy, H. Schmeing, N.C. Bray, W.L. Perry, R.B. Walker and M. Wightman
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74. THE CHALK RIVER HELIUM JET AND SKIMMER SYSTEM
H. Schmeing, V. Koslowsky, M. Wightman, J.C. Hardy, J.A. Macdonald, T. Faestermann, H.R. Andrews, J.S. Geiger and R.L. Graham
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75. BETA-DELAYED PROTON EMISSION: A NEW SERIES OF PRECURSORS AND THE MEASUREMENT OF 10^{-16} s NUCLEAR LIFETIMES
J.C. Hardy, J.A. Macdonald, H. Schmeing, T. Faestermann, H.R. Andrews, J.S. Geiger, R.L. Graham and K.P. Jackson
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76. BETA-DELAYED PROTON EMISSION: A NEW SERIES OF PRECURSORS AND THE MEASUREMENT OF 10^{-16} NUCLEAR LIFETIMES
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77. BETA-DELAYED PROTONS, STRENGTH FUNCTIONS AND NUCLEAR LIFETIME MEASUREMENTS IN THE REGION OF 10^{-16} s
J.C. Hardy

Proc. of XV Winter School on Nuclear Physics at Zakopane, Poland, Report #963/PL (1977) 321.

78. SUPERALLOWED NUCLEAR BETA DECAY: A NUCLEAR VIEW OF THE Z VECTOR BOSON AND SYMMETRY RESTORATION IN HIGH ELECTROMAGNETIC FIELDS

J.C. Hardy

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79. BETA-DECAY STRENGTH FUNCTIONS: ON THE FRONTIERS OF PANDEMONIUM

J.C. Hardy

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80. DELAYED PROTON RADIOACTIVITIES

J. Cerny and J.C. Hardy

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81. $T_z=1/2$ BETA-DELAYED PROTON PRECURSORS, I: THE DECAY OF ^{69}Se

J.A. Macdonald, J.C. Hardy, H. Schmeing, T. Faestermann, H.R. Andrews, J.S. Geiger, R.L. Graham and K.P. Jackson

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82. RADIOACTIVITY

J.C. Hardy

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83. SEARCH FOR 0^+ LEVEL NEAR THE 8.87 MeV, 2^- LEVEL OF ^{16}O

A.B. McDonald, T.K. Alexander, J.R. Beene, J.C. Hardy, K.P. Jackson and H.-B. Mak

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84. ANALOGUE SYMMETRY BREAKING IN SUPERALLOWED FERMI BETA DECAY

I.S. Towner, J.C. Hardy and M. Harvey

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85. DECAY OF A $T_z = -2$ NUCLEUS: ARGON-32

E. Hagberg, P.G. Hansen, J.C. Hardy, A. Huck, B. Jonson, S. Mattsson, H.L. Ravn, P. Tidemand-Petersson and G. Walter

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E. Hagberg, P.G. Hansen, J.C. Hardy, P. Hornshoj, B. Jonson, S. Mattsson and P. Tidemand-Petersson

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J.C. Hardy, B. Jonson and P.G. Hansen

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88. CHARGE DEPENDENCE IN SUPERALLOWED BETA DECAY: A COMMENT

I.S. Towner and J.C. Hardy

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91. THE ESSENTIAL DECAY OF PANDEMONIUM: β -DELAYED NEUTRONS
J.C. Hardy, B. Jonson, P.G. Hansen
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T. Elmroth, E. Hagberg, P.G. Hansen, J.C. Hardy, B. Jonson, H.L. Ravn, P. Tidemand-Petersson and the ISOLDE Collaboration
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94. REVIEW OF 2 ARTICLES FROM ANN. REV. NUCL. SCIENCE
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97. DELAYED PROTON DECAY AMONG LIGHT NUCLEI ($A < 100$)
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