

Curriculum Vitae

Richard E. Azuma

BIOGRAPHICAL INFORMATION

1. Personal

name: Richard Ernest Azuma
date of birth: April 18, 1930
citizenship: Canadian
home address: 43 Hartfield Rd. Toronto, Ontario M9A3C8
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2. Degrees

B.A., 1951, University of British Columbia
M.A., 1953, University of British Columbia
Ph.D., 1959, University of Glasgow, Scotland

3. **Employment**

Professor Emeritus
Professor, University of Toronto, 1973-1998
Associate Professor, University of Toronto, 1963-1972
Assistant Professor, 1961-63
Lecturer, University of Glasgow, 1960-61
I.C.I. Post Doctorate Fellow, Glasgow, 1959-60

B ACADEMIC HISTORY

1. Research Endeavours

Nuclear Structure via radiative Capture The Weak Nuclear Interaction
Nucleus Far from Stability
Nuclear Astrophysics

2. Research Awards (since 1976)

1976- 77 NSERC Operating Grant	\$33,000
1977- 78 Operating Grant	35,000
1978- 79 NSERC Travel Grant	1,000
1978- 79 NSERC Operating Grant	30,000
1979-80 NSERC Operating Grant	28,000
1980-81 NSERC Operating Grant	35,000
1981-82 NSERC Co-op Evans of Queen's University	27,000
1981-82 NSERC Equipment Grant	30,000
1981-82 NSERC Operating Grant	36,000
1982-83 Nuclear Physics Operating Grant	40,000
1982 NSERC Core Grant	65,000
1982-84 IEP Project Grant	40,000
1983-84 NSERC Operating	46,000
1983-84 NSERC Infrastructure	75,000
1983-84 NSERC Intermediate Energy	40,000
1987-88 NSERC Operating	20,000
1987-88 NSERC Project	11 ,800
1987-88 NSERC Infrastructure (with J.D. King)	37,800
1988-89 NSERC Infrastructure (with J.D. King)	40,000
1988-89 NSERC Operating	20,000

1988-89 NSERC Project (with D. Frekers)	17,000
1988-89 NSERC Project (with J.D. King)	20,000
1989-90 NSERC Operating Grant	20,000
Continuing 1989/90 NSERC Infrastructure (with J.D. King)	37,000
1990-91 NSERC Project (spokesman: R.E. Azuma)	19,500
1990-91 NSERC Operating Grant	22,000
1990-91 NSERC Project (spokesman: J. D'Auria)	25,000
1991-92 NSERC Operating Grant	22,000
1991-92 NSERC Infrastructure (with J.D. King)	37,000
1992-93 NSERC Operating	22,000
1992-93 NSERC Infrastructure	25,000
1992-93 NSERC Project Grant RED GIANT*	140,000
1993-94 RED GIANT*	75,000
1994-95 RED GIANT*	35,000

*RED GIANT is a multi-institutional collaboration (U ofT, SFU, U of A, TRIUMF, Caltech) of which I am the spokesman and principal investigator.

C SCHOLARLY AND PROFESSIONAL WORK

C.I Articles

1. R.E. Azuma and G.M. Lewis, "Lifetime of First Excited State in Th^{203} ", Phil. Mag. 46, 1034 (1955).
2. R.E. Azuma, "Upper Limits for the Lifetimes of the Excited States in Ti^{46} ", Phil. Mag. 46, 1031 (1955).
3. R.E. Azuma and G.M. Lewis, Delayed γ -Angular Correlations in Tantalum 181, Phil. Mag. 2, 1325 (1957).
4. G.M. Lewis and R.E. Azuma, "On the Measurement of p-Meson Production Near Threshold", Proc. Phys. Soc. 73, 873 (1959).
5. G.M. Lewis, E. Gabathuler and R.E. Azuma, "The Detection of p-Mesons by Time of Flight", Nucl. Inst. and Methods 8, 230 (1960).

6. W.M. Currie, R.E. Azuma and G.M. Lewis, "Measurements of Instrumental Time Delay and Resolution in Fast Coincidence Systems", Nucl. Instr. and Methods 13, 215 (1961)
7. G.M. Lewis, R.E. Azuma, E. Gabathuler, D. Leith and W.R. Hogg, "On the Photoproduction of Positive Pions from Liquid Hydrogen Near Threshold", Phys. Rev. 125, 378 (1962).
8. V.S. Ajdacic, R.E. Azuma and W.H. Fleming, "Measuring In- Core Neutral Fluxes with Semi-Conductors", Nucleonics 21, No. 1 (1963).
9. R.E. Azuma, L.W. Oleksiuk, J.D. Prentice and P. Taras, "Properties of the 3.16 MeV Level of Cl^{35} ", Phys. Rev. Lett. 17, 659 (1966).
10. R.E. Azuma, L.E. Carlson, A.M. Charlesworth, K.P. Jackson, B. Lalovic and N. Anyas-Weiss, A Ge(Li) Investigation of the γ - ray Decay of Si^{28} Produced in the Reaction $Al^{27}(p, \gamma)Si^{28}$ ", Can. J. 44, Phys. 3075 (1966).
11. B. Lalovic, R.E. Azuma, Petrovic, "Large Multi-Element Li(Ge) Detectors", Trans LE.E.E., Nucl. Sci. 14, 514 (1967)
12. P. Taras and R.E. Azuma, "Triple Correlation Coefficients for Reaction", Nucl. Instr. And Methods 47, 116 (1967).
13. L.E. Carlson and R.E. Azuma, "Attenuated Doppler Shift Lifetime Measurements in Proton Capture Reactions", 24B, 462 (1967).
14. P. Taras, R.E. Azuma, J.D. Prentice and L.W. Oleksiuk, "Properties of Some Levels of Cl^{35} ", Phys. Rev. 164, 1386 (1967).
15. R.E. Azuma, N. Anyas-Weiss and A.M. Charlesworth, "The Lifetime of the 3.163 MeV Level of Cl^{35} ", Nucl. Phys. A109, 577 (1968).
16. N.E. Davidson, J.T. Sample, W.J. McDonald, W.J. Weisshahn, R.E. Azuma and J.D. Prentice, "Levels in ^{35}Cl Populated by $S^{34}(d,n)Cl^{35}$ ", Phys. Rev. **182**, 1168 (1969).
17. N. Anyas-Weiss, A.M. Charlesworth, L.E. Carlson, K.P. Jackson and R.E. Azuma, "Properties of the 9.699 MeV Level in Si^{28} ", Can. J. Phys. **47**, 1725 (1969).
18. J.E. Aitken, K.W. Allen, R.E. Azuma, A.E. Litherland and D.W.O. Rogers, "Discovery of the $11/2+$ Level in F^{19} ", Phys. Lett. 28B, 653 (1969).
19. J. H. Aitken, R.E. Azuma, et al., "A survey of New Resonances in $N^{15}(\alpha, \gamma) F^{19}$ Reaction", Can. J. Physics 48, 1617 (1970).
20. S.T. Lam, R.E. Azuma and A.E. Litherland, "A Study of the $E_p = 1.724$ MeV Resonance in the $Al^{27}(p, \gamma)Si^{28}$ Reaction", Can. J. Phys. 49,685 (1971).
21. C. Rolfs, H.P. Trautvetter, R.E. Azuma, A.E. Litherland, "The $K^\pi = 1^+$ Rotational Band in F^{18} ", Phys. Rev. Letts. 27, 1007 (1971).
22. J.P.Gonidec, C. Mieke, G. Walter, L.E. Carlson and R.E. Azuma, "Etude de la Resonance a 1213 KeV Dans La Reaction $^{27}Al(p, \gamma)Si^{28}$, Alimentant Les Niveaux $0+$ de Si^{28} ", Nucl. Phys.

23. C. Rolfs, H.P. Trautvetter, R.E. Azuma and A.E. Litherland, "A $K11' = 1+$ Rotational Band in ^{18}F ", Phys. Rev. Lett. **27**, 1007-1009 (1971).
24. I. Berka, C. Rolfs and R.E. Azuma, "Excitation Energy of the Fourth Excited State in ^{18}F ", Can. J. Phys. **50**, 1682-1686 (1972).
25. C. Rolfs, A.M. Charlesworth and R.E. Azuma, "Nuclear Structure of ^{18}F (I): Radiative Capture Experiments", Nucl. Phys. **A199**, 257-273 (1973).
26. C. Rolfs, W.E. Kieser, R.E. Azuma and A.E. Litherland, "Nuclear Structure of ^{18}F (II): Low Spin $(2s, 1d)^2$ States", Nucl. Phys. **A199**, 274-288 (1973).
27. C. Rolfs, H.P. Trautvetter, R.E. Azuma and A.E. Litherland, "Nuclear Structure of ^{18}F (III): The $K^\pi = 1^+$ Rotational Band", Nucl. Phys. **A199**, 289-305 (1973).
28. C. Rolfs, I. Berka and R.E. Azuma, "Nuclear Structure of ^{18}F (IV): Negative Parity States", Nucl. Phys. **A199**, 306-327 (1973).
29. C. Rolfs, I. Berka, H.P. Trautvetter and R.E. Azuma, "Nuclear Structure of ^{18}F (V): A Further Study and Summary of Low-Lying $(2s, 1d)^2$ states", Nucl. Phys. **A199**, 328-350 (1973).
30. C. Rolfs and R.E. Azuma, "Interference Effects in $^{12}\text{C}(p, \gamma)^{13}\text{N}$ and Direct Capture to Unbound States", Nucl. Phys. **A227**, 291-308 (1974).
31. I. Berka, K.P. Jackson, C. Rolfs, A.M. Charlesworth and R.E. Azuma, "Isospin Mixing of the 5605 and 5668 keV States in ^{18}F in the Light of a new State at 5603 keV", Nucl. Phys. **A288**, 317 (1977).
32. K.P. Jackson, R.E. Azuma, I. Berka of University of Toronto, and T. Faestermann, J.S. Geiger, J.C. Hardy and H. Schmeing of AEC, Chalk River, "The Weak Neutral Current: Search for a α -Isomer in ^{42}Sc and ^{46}V ", Can. J. Phys. **57**, 411-416 (1979).
33. R.E. Azuma, L.C. Carraz, P.G. Hansen, B. Jonson, K.L. Kratz, S. Mattsson, G. Nyman, H. Ohm, H.L. Ravn, A. Schrader, W. Zeigert, "First Observation of Beta-Delayed Two-neutron Radioactivity: ^{11}Li ", Phys. Rev. Lett. **43**, 1652 (1979).
34. R.E. Azuma, G.L. Borschert, L.C. Carraz, P.G. Hansen, B. Jonson, G. Mattsson, O.B. Nielson, G. Nyman, Ragnersson and H.L. Ravn, "The Strongly Deformed Nucleus ^{100}Sr ", Phys. Lett. **86B**, 5 (1979).
35. W.E. Kieser, R.E. Azuma, I. Berka, K.P. Jackson, A.B. McDonald, H.B. Mak and W. McLatchie, "The $J^\pi = 3$ Doublet at $E_x=6241$ keV in ^{18}F : Isospin Mixing", Nucl. Phys. **A327**, 172-192 (1979).
36. W.E. Kieser, R.E. Azuma and K.P. Jackson, "The $^{17}\text{O}(p, \alpha)^{14}\text{N}$ Reaction: Physics and Astrophysics", Nucl. Phys. 155-179 (1979).

37. M. Wiescher, H.W. Becker, J. Görres, K.-V. Kettner, H.P. Trautvetter, W.E. Kieser, C. Rolfs, R.E. Azuma, K.P. Jackson and W.J. Hammer, "Nuclear and Astrophysical Aspects of ^{18}O (p,γ) ^{19}F ", Nucl. Phys. **A349**, 165-216 (1980).
38. R.E. Azuma, T. Bjornstad, H.A. Gustafsson, P.G. Hansen, B. Jonson, S. Mattsson, G. Nyman, A.M. Poskanzer and H.L. Ravn, "Beta-delayed three-neutron radioactivity of ^{11}Li ", Phys. Lett. **96B**, 31(1980).
39. H.B. Mak, G.T. Ewan, H.C. Evans, J.D. McArthur, W. McLatchie and R.E. Azuma, "The Alpha Widths of the 5603, 5605 and 5668 keV states in ^{18}F ", Nucl. Phys. **A343**, 79-90 (1980).
40. E.T.H. Clifford, J.C. Hardy, H. Schmeing, R.E. Azuma, H.C. Evans, T. Faestermann, E. Hagberg, K.P. Jackson, V.T. Koslowsky and U.J. Schrewe, "Kinematic Shifts of β -Delayed Particles as a Probe of β - γ Angular Correlations", Proc. of IVth Int. Conf. on Nuclei Far from Stability, Helsingør (1981).
41. V.T. Koslowsky, J.C. Hardy, R.E. Azuma, G.C. Ball, E.T.H. Clifford, W.G. Davies, E. Hagberg, H. Schmeing, U.J. Schrewe and K.S. Sharma, "Precision Mass Measurements", Proc. IVth Int. Conf. on Nuclei Far from Stability, Helsingør (1981).
42. S. Mattsson, R.E. Azuma, H.A. Gustafsson, P.G. Hansen, B. Jonson, V. Lindfors, G. Nyman and D. Scharat, "The Strongly Deformed Nucleus ^{100}Sr ", Proc. IVth Int. Conf. on Nuclei Far From Stability, Helsingør (1981).
43. Krawinkel et. al. and R.E. Azuma, "The $^3\text{He}(\alpha,\gamma)^7\text{Be}$ Reaction and the Solar Neutrino Problem", Z. für Phys. **304**, 307 (1982).
44. V.T. Koslowsky, J.C. Hardy, R.E. Azuma, G.C. Ball, E. Clifford, W.G. Davies, E. Hagberg, H. Schmeing, U. Schrewe and K.S. Sharma, "Fermi Beta-Decay: Precision Q-Value Doublet Measurements by a New Technique." **119B**, 57 (1982).
45. E.T.H. Clifford et al. and R.E. Azuma, "Kinematic Shifts in β -delayed-particle decay of ^{20}Na ", Phys. Rev. Lett. **23**, Vol. 50 (1983).
46. G. Nyman et al. and R.E. Azuma, "Structure in the Beta Delayed Neutron Spectrum of ^9Li ", XI International N.P. Workshop, Hirschegg, Austria (1983).
47. V.T. Koslowsky, E. Hagberg, J.C. Hardy, R.E. Azuma, E.T.H. Clifford, H.C. Evans, H. Schmeing, U.J. Schrewe and K.S. Sharma, "The Half-Lives of ^{26m}Al , ^{34}Cl , ^{38m}K : Precision measurements with isotope-separated samples", Nucl. Phys. **A405** 29-39 (1983).
48. P. Schmalbrock, H.W. Becker, L. Buchmann, J. Görres, K.U. Kettner, W.E. Kieser, H. Krawinkel, C. Rolfs, H.P. Trautvetter, J.W. Hammer and R.E. Azuma, "Stellar Reaction Rate of ^{20}Ne (α,γ) $^{24}\text{Mg}^+$ ". Nucl. Phys. **A 398** (1983).
49. R.A. Leavitt et al. with R.E. Azuma, "Isospin Mixing in 2-levels in ^{16}O ". Nucl. Phys. **A410** 93-102 (1983).
50. E. Clifford, J. Hardy, H. Schmeing, R.E. Azuma, H.C. Evans, E. Hagberg, K. Jackson, V. Koslowsky, U.J. Schrewe, "Kinematic Shifts in the β -Delayed Decay of ^{20}Na , and the β - ν Angular Correlation." Phys. Rev. Letts. **50**, 23 (1983).
51. M. Wiescher, R.N. Boyd, S.L. Blatt, L.J. Rybarczyk, J.A. Spizuoco, R.E. Azuma, T.H. Clifford, J.D. King, J. Görres, C. Rolfs and A. Vlieks, "Study of ^{11}C Level Structure Via the $10\text{B}(p,g)$

- Reaction." Phys. Rev. **C1431**(Dec. 1983).
52. S.S.M. Wong, R.E. Azuma, T.E. Drake, J.D. King and X. Zhu, "Wolfenstein parameters for $0^+ \rightarrow 0^-$ Transitions Excited by proton Scattering At Intermediate Energies." Phys. Lett. **149B**, 299 (1984).
 53. E.T.H. Clifford, R.E. Azuma, et al., "Measurements of the Response of a hybrid detector telescope...", N. Instr. and Methods, 224, 440 (1984).
 54. X. Zhu, R.E. Azuma, T.E. Drake, J.D. King and S.S.M. Wong, "Wolfenstein parameters in the helicity representation for intermediate-energy proton-nucleus scattering." Nucl. Phys. **A439**, 619 (1985).
 55. W. Alford, et al., (R.E. Azuma), "Radii of the Effective Isovector Interaction Strengths Between 200 and 450 MeV from the $^{14}\text{C}(p,n)^{14}\text{N}$ Reaction." Phys. Rev. Lett. (1986).
 56. C.A. Miller, et al., (R.E. Azuma), "Large Angle Elastic Scattering of 200 MeV Protons from ^{208}Pb ." Phys. Lett. **169B**, 166 (1986).
 57. U. Schroder, A. Redder, C. Rolfs, R. Azuma, L. Buchmann, J. King, J. Vise, and T. Donoghue. "Astrophysical S-Factor of $^3\text{H}(\alpha,\gamma)^7\text{Li}$ ". Phys. Lett. **B192** 55 (1987).
 58. P.V. Magnus, M.S. Smith, P.D. Parker, R.E. Azuma, C. Campbell, J.D. King, and J. Vise. "Measurement of the $^{15}\text{N}(\alpha,\gamma)^{19}\text{F}$ Resonances at $E_{\text{cm}} = 536$ and 542 keV". Nuclear Phys. **A470** 206 (1987).
 59. U. Schroeder, H.W. Becker, G. Bogaert, J. Gorres, C. Rolfs, H.P. Trautvetter, R.E. Azuma, C. Campbell, J.D. King, and J. Vise. "Stellar Reaction Rate of $^{14}\text{N}(p,\gamma)^{15}\text{O}$ and Hydrogen Burning in Massive Stars". Nucl. Phys. **A470** 206 (1987).
 60. E. Frekers, S.S.M. Wong, R.E. Azuma, T.E. Drake, J.D. King, L. Buchmann, and R. Schubank, R. Abegg, K.P. Jackson, C.A. Millar, and S. Yen, W.P. Alford, R.L. Helmer, C. Broude, S. Mattson and E. Rost. "Elastic and Inelastic Scattering of 362 MeV Polarized Protons from ^{40}Ca ". Phys. Rev. **C35** 2236 (1987).
 61. V.T. Koslowsky, *et al.*, (AECL) and R.E. Azuma. "The Precise Determination of Q_{ec} - Value Differences Between Four Pairs of Super-Allowed β Emitters: ^{140}La and ^{26m}Al , and ^{42}Sc , ^{42}Sc , and ^{54}Co , and ^{54}Co and ^{50}Mn ". Nucl. Phys. **A.472** 419-444 (1987).
 62. V.T. Koslowsky, *et al.* (AECL) and R.E. Azuma. "The Precise Determination of Some γ -ray Transition Energies in ^{26}Al , ^{27}Al , and ^{55}Co ". Nucl. Phys. **A.472** 408-418 (1987).
 63. K.P. Jackson, A. Celler, W.P. Alford, K. Rayuwood, R. Abegg, R.E. Azuma, C.K. Campbell, S. El-Kateb, D. Frekers, P.W. Green, O. Hauser, R.L. Helmer, R.S. Henderson, K.H. Hicks, R. Jeppeson, P. Lewis, C.A. Miller, A. Moalem, M.A. Moinester, R.B. Schubank, G.G. Shute, B.M. Spicer, M.C. Vetterli, A.I. Yavin, S. Yen. "The (p,n) Reaction as a Probe of Gamow-Teller Strength". Submitted to Phys. Lett. **201B** 22-25 (1988).
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 65. L. Lee, T.E. Drake, S.S.M. Wong, D. Frekers, R.E. Azuma, L. Buchmann, A. Galindouribarri,

- J.D. King, R. Schubank, R. Abegg, R. Helmer, K.P. Jackson, C.A. Miller, S. Yen, H.V. Vonger, "Intermediate Energy Proton-Scattering From ^{40}Ca , ^{90}Zr and ^{208}Pb ", Phys. Lett. **B205**, 219 (1988).
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75. J. Görres, S. Graff, R.E. Azuma, et al, "Proton Capture on ^{14}C and its Astrophysical Implications", Nucl. Phys. **A517**, 329-339 (1990).
76. C. Iliadis, V. Giesen, J. Sorres, S. Grapf, M. Wiescher, R.E. Azuma, M. Buckby, J. King, C.A. Barnes and T.R. Wang, "The Reaction Branching $^{31}\text{P}(p, \gamma)^{31}\text{P}(p, \alpha)$ in the r-p process", Nucl. Phys. **A533**, 153-169 (1991).
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104. C. Ruiz, F. Sarazin, L. Buchmann, T. Davinson, R.E. Azuma, A.A. Chen, B.R. Fulton, D.

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107. “Measurement of the $^{19}\text{F}(p,\gamma)^{20}\text{Ne}$ reaction and interference terms from $E_{\text{c.m.}}=200\text{-}760$ keV,” A. Couture, M. Beard, M. Couder, J. Görres, L. Lamm, P.J. LeBlanc, H.Y. Lee, S. O'Brien, A. Palumbo, E. Stech, E. Strandberg, W. Tan, E. Überseder, C. Ugalde, M. Wiescher, and R. Azuma, *Phys. Rev. C* **77**, 015802 (2008).
108. “Thermonuclear rate for the $^{19}\text{F}(\alpha,p)^{22}\text{Ne}$ reaction at stellar temperatures,” C. Ugalde, R.E. Azuma, A. Couture, J. Görres, H.Y. Lee, E. Stech, E. Strandberg, W. Tan, and M. Wiescher, *Phys. Rev. C* **77**, 035801 (2008).
109. “ $^{24}\text{Mg}(\alpha,\gamma)^{28}\text{Si}$ resonance parameters at low α -particle energies,” E. Strandberg, M. Beard, M. Couder, A. Couture, S. Falahat, J. Görres, P.J. LeBlanc, H.Y. Lee, S. O'Brien, A. Palumbo, E. Stech, W.P. Tan, C. Ugalde, M. Wiescher, H. Costantini, K. Scheller, M. Pignatari, R. Azuma, L. Buchmann, *Phys. Rev. C* **77**, 055801 (2008).
110. “The $^{13}\text{C}(\alpha,n)$ reaction and its role as a neutron source for the s process,” M. Heil, R. Detwiler, R. E. Azuma, A. Couture, J. Daly, J. Görres, F. Käppeler, R. Reifarth, P. Tischhauser, C. Ugalde, and M. Wiescher, *Phys. Rev. C* **78**, 025803 (2008).
111. “Measurement of elastic $^{12}\text{C} + \alpha$ scattering: Details of the experiment, analysis, and discussion of phase shifts,” P. Tischhauser, A. Couture, R. Detwiler, J. Görres, C. Ugalde, E. Stech, M. Wiescher, H. Heil, F. Käppeler, R.E. Azuma, L. Buchmann, *Phys. Rev. C* **79**, 055803 (2009).

D LIST OF COURSES

a. Undergraduate Courses Taught (since 1987)

1991-92

PRY 235F ERINDALE - Including all tutorials and marking.

PRY 240 ERINDALE (Fall Term) - Including all tutorials and marking.

1990-91

PRY 240Y ERINDALE (Fall Term) - Including tutorials and half of marking PRY 235Y ERINDALE -

Including tutorials and marking

PRY 4 ERINDALE - Reading Course (P. Stevens ... Dark Matter in the Universe)

1988-89

PRY 240Y ERINDALE

Convenor - 1st year laboratory

b. Graduate Courses Taught

c. Theses Supervised

i. Masters Students

James Powell, "Preliminary studies of the $I6N$ (beta α) decay and its relevance to the $^{12}C(\alpha, \gamma)$ reaction, 1990-91.

J. Iwaskow, "A Study of the $E=6259$ keV State in ^{18}F ", University of Toronto, 1975.

E.T.R. Clifford, "An Investigation of the Isospin Properties of the 13.411 MeV State of ^{20}Ne ", University of Toronto, 1974.

W.E. Kieser, "A Study of the 6138 KeV Level in ^{18}F ", University of Toronto, 1971.

G. Beresnevich, "Digitized Wire Spark Chambers for Electron Scattering", University of Toronto, 1967.

N. Anyas- Weiss, "Lifetime of the 3.16 MeV Level of Cl^{35} ", University of Toronto, 1965.

A.M. Charlesworth, "Chlorine-35; Delayed coincidence Lifetime Measurements", University of Toronto, 1964.

K.P. Jackson, "Measurement of the Mean Life of the 2.15 MeV State of B^{10} ", University of Toronto, 1964.

P. Taras, "Properties of Levels of Cl^{35} ", University of Toronto, 1963. R.K. Carnegie, "The Lifetime of the 1.74 MeV State in B^{10} ", University of Toronto, 1963.

V. Koslowsky

C. Campbell

ii. Doctoral Students

James Powell, "The beta α decay of ^{16}N ", 1991

E.T.H. Clifford, "Kinematic Shifts in Beta-Delayed-Particle Emission As a Probe of Beta-Neutrino Angular Correlations", University of Toronto, 1981. W.E. Kieser, "The Nuclear Structure of ^{18}F ", University of Toronto, 1977.

Ivan Berka, "Nuclear Structure of ^{18}F ", University of Toronto, 1974. A.M. Charlesworth, "Radiative Capture of Alpha Particles to States in ^{18}F ", University of Toronto, 1971.

J.H.Aitken, "Electro Magnetic Decay of States of High Spin and High Isospin in Fluorine 19", University of Toronto, 1969.

LE. Carlson, "Properties of Levels in Si^{28} ", University of Toronto, 1967.

K.P. Jackson, "Measurements of the Lifetimes of the 1740, 2154 and 3585 Ke V States of B^{10} ", University of Toronto, 1967.

M. Charlesworth, 1967

P. Taras, "Properties of Levels in Cl^{35} ", University of Toronto, 1965.

V. Koslowsky

d. Postdoctoral Fellows

1. Dr. C. Zhu

2. Dr. D. Frekers

3. Dr. L. Buchmann

4. Dr. T.R. Wang, UoIT PDF posted at CALTECH. (1990-91)

e. Research Associates

L. Buchmann TRIUMF

E ADMINISTRATIVE POSITIONS

a. Within the University

1972- 78 Associate Chairman, Graduate Studies, Department of Physics, University of Toronto

1975- 78 General Council of the Graduate School

1976- 78 Executive Committee of Division 3 of the Council of the Graduate School

- 1977-78 University of Toronto Grievance Review Panel Chairman
- 1982-87 Chairman, Department of Physics, University of Toronto
Numerous Departmental and University Committees
- 1988-89 Colloquium Committee (1 meeting every two weeks)
- 1988-89 Decanal Promotions Committee 1989-90 (Time -t infinity)
- 1991-92 Member, Physics Tenure Committee for Prof. D. Bailey (2 days)
- 1991-92 Member, Physics Tenure Committee for Prof. B. Statt (2 days)
- 1991-92 Chairman, Geophysics Search Committee (2-3 weeks)
- 1991-92 Provostial Assessor - FEUT (3 days)
- b. Outside the University
- 1967 Secretary, Nuclear Physics Division, Canadian Association of Physics
- 1972-74 Member, Nuclear Physics Grant Selection Committee, N.R.C.
- 1974-76 Chairman, Nuclear Physics Grant Selection Committee, N.R.C.
- 1974- 77 Member, High Energy Physics Grant Selection Committee, N.R.C.
- 1974-77 Member, Physics Grant Selection Committee, N.R.C.
- 1976-77 Chairman, Intermediate Energy Physics Grant Selection Committee, N .R.C.
- 1976-77 Member, Nuclear Physics Grant Selection Committee, N.R.C.
- 1977-78 Member, Geological Survey of Canada Sub-committee on Disposal of Nuclear Wastes
- 1977-78 Member, TRIUMF Advisory Board of N.R.C.
- 1978-79 NSERC - Ad Hoc Committee - Montreal Electron Linac Proposal.
- 1982-83 NSERC - Ad Hoc Committee, Saskatchewan Electron Linac Proposal.
- 1982-83 NSERC - Ad Hoc Committee - Montreal Electron Linac Proposal.
- 1983 Chairman - IPPC Steering Committee for NRC and NSERC
- Member, Site Visit, NSERC, Sask. LINAC
- Member, Site Visit, NSERC, Montreal LINAC proposal.

- 1987-90 TRIUMF Operating Committee - Member
This is the primary TRIUMF Committee which makes decisions on all operating, experimental, and personnel aspects of the TRIUMF operation. (Full day meeting every month & liaison time with staff)
- 1988-89 NSERC AD HOC Committee - on Accelerator Labs (Two weeks full time)
- 1990-91 Member, International Advisory Committee on ISOLAB
- 1990-91 Alternate Member, Operating Committee, Triumf