

1 Richard Abram Baartman

Job Title: Senior Research Scientist

Institution: TRIUMF

1.1 Research Contributions

I have contributed to the theoretical understanding of charged particle optics. This has led to improved beamline designs, both at TRIUMF, and through consultation at other labs as well. The contributions are reflected in the list of publications given below.

1.2 Professional Activities and External Representation

- DOE review committee for FNAL Run II (Chicago).
- DOE review committee for SNS construction (Oak Ridge).
- Program committee, Particle Accelerator conference.

1.3 Contributions to the Training of Highly Qualified Personnel

I have personally supervised summer students and Co-op students over the past 3 summers.

1.4 Recent Publications (last 5 years)

TRIUMF High Intensity Cyclotron Development For ISAC, G. Dutto, R. Baartman, P. Bricault, I. Bylinsky, A. Hurst, G. MacKenzie, R. Poirier, Y-N Rao, L. Root, R. Ruegg, G. Stinson, Proc. Int. Cyclotron Conf. 2004, Tokyo.

Summary of Session H: Cyclotrons and FFAGs, R. Baartman and S. Martin, AIP Conf. Proc. **773** p. 461.

Range straggling of low energy $^8\text{Li}^+$ in thin metallic films using β -NMR, T.R. Beals, R.F. Kiefl, W.A. MacFarlane, K.M. Nichol, G.D. Morris, C.D.P. Levy, S.R. Kreitzman, R. Poutissou, S. Daviel, R.A. Baartman, K.H. Chow, Physica B, **326**, 205-208 (2003).

Low-energy spin-polarized radioactive beams as a nano-scale probe of matter, R.F. Kiefl, W.A. MacFarlane, G.D. Morris, P. Amaudruz, D. Arseneau, H. Azumi, R. Baartman, T.R. Beals, J. Behr, C. Bommas, J.H. Brewer, K.H. Chow, E. Dumont, S.R. Dunsiger, S. Daviel, L. Greene, A. Hatakeyama, R.H. Heffner, Y. Hirayama, B. Hitti, S.R. Kreitzman, C.D.P. Levy, R.I. Miller, M. Olivo, R. Poutissou, Physica B, **326**, 189-195 (2003).

The new β -NMR facility at TRIUMF and applications in semiconductors, K.H. Chow, Z. Salman, R.F. Kiefl, W.A. MacFarlane, C.D.P. Levy, P. Amaudruz, R. Baartman, J. Chakhalian, S. Daviel, Y. Hirayama, A. Hatakeyama, D.J. Arseneau, B. Hitti, S.R. Kreitzman, G.D. Morris, R. Poutissou, and E. Reynard, Physica B, **340**, 1151-1154 (2003).

Quadrupolar split $^8\text{Li}^+$ β -NMR in SrTiO, W.A. MacFarlane, G.D. Morris, K.H. Chow, R.A. Baartman, S. Daviel, S.R. Dunsiger, A. Hatakeyama, S.R. Kreitzman, C.D.P. Levy, R.I. Miller, K.M. Nichol, R. Poutissou, E. Dumont, L.H. Greene, R.F. Kiefl, Physica B, **326**, 209-212 (2003).

⁸Li⁺ β -NMR in thin film metals, W.A. MacFarlane, G.D Morris, T.R. Beals, K.H. Chow, R.A. Baartman, S. Daviel, S.R. Dunsiger, A. Hatakeyama, S.R. Kreitzman, C.D.P. Levy, R.I. Miller, K.M. Nichol, R. Poutissou, R.F. Kiefl, Physica B, **326**, 213-216 (2003).

Investigation Of Space Charge Effect In TRIUMF Injection Beamline R. Baartman, Y.-N. Rao IEEE Particle Accelerator Conference (PAC2003), Portland, Oregon, 12-16 May 2003.

The TRIUMF 500 Mev Cyclotron: Present Operation And Intensity Upgrade R. Baartman, et al. IEEE Particle Accelerator Conference (PAC2003), Portland, Oregon, 12-16 May 2003.

Isochronous And Scaling FFAGs R. Baartman (TRIUMF). 2003. Prepared for 20th ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams (ICFA - HB2002), Fermilab, Illinois, 8-12 Apr 2002. Published in AIP Conf. Proc. **642** 200-203

Summary Report P. Schmelzbach (PSI, Villigen), Y. Mori (KEK, Tsukuba), G. Dutto, R. Baartman (TRIUMF). 2003. Prepared for 20th ICFA Advanced Beam Dynamics Workshop on High Intensity and High Brightness Hadron Beams (ICFA - HB2002), Fermilab, Illinois, 8-12 Apr 2002. AIP Conf. Proc. **642** 195-196.

A High Intensity DC H⁻ Source For Low Energy Injection T. Kuo, R. Baartman, G. Dutto, S. Hahto, J. rje, and E. Liukkonen, Rev. Sci. Instrum. **73**, 986 (2002)

Low Energy Beam Transport Design Optimization For RIBs R. Baartman. Invited talk at Production of Radioactive Ion Beams (ProRIB-2001), Calcutta, India, Feb. 12-17, 2001. Indian Journal of Physics, **76S**, pp. 149-152.

Low Energy Spin Polarized Radioactive Nuclei: A New Instrument For Condensed Matter Research R. Miller, R. Kiefl, J. Brewer, J. Chakhalian, S. Dunsiger, P. Amaudruz, Z. Anatoli, R. Baartman, J. Behr, S. Daviel, J. Doornbos, S. Kreitzman, T. Kuo, C. Levy, G. Morris, M. Olivo, R. Poutissou, G. Wight. PAC-2001-FOAA007, Aug 2001. Presented at IEEE Particle Accelerator Conference (PAC2001), Chicago, Illinois, 18-22 Jun 2001.

The TRIUMF Facility and Cyclotron Developments R. Baartman, P. Bricault, M. Dombisky, G. Dutto, K. Fong, T. Kuo, R. Laxdal, G. Mackenzie, A. Mitra, M. Olivo, R. Poirier, K. Reiniger, L. Root, R. Rugg, P. Schmor, M. Stenning, G. Stinson (TRIUMF). PAC-2001-WPPH059, Aug 2001. 3pp. Presented at IEEE Particle Accelerator Conference (PAC2001), Chicago, Illinois, 18-22 Jun 2001.

Multiturn Simulation Of Coherent Betatron Resonance With Space Charge R. Baartman, M. D'yachkov, F. Jones (TRIUMF). PAC-2001-TOPB004, Aug 2001. 3pp. Presented at IEEE Particle Accelerator Conference (PAC2001), Chicago, Illinois, 18-22 Jun 2001.

Complementarity Of Low-Energy Spin Polarized Radioactive Nuclei And Muons R.F. Kiefl, G.D. Morris, P. Amaudruz, R. Baartman, J. Behr, J.H. Brewer, J. Chakhalian, S. Daviel, J. Doornbos, S. Dunsiger, S.R. Kreitzman, T. Kuo, C.D.P. Levy, R. Miller, M. Olivo, R. Poutissou, G.W. Wight and A. Zelenski, Physica B: Condensed Matter, **289-290** (1-4) (2000) pp. 640-647

CW Performance Of The TRIUMF 8 Meter Long RFQ For Exotic Ions R.L. Poirier, R. Baartman, P. Bricault, K. Fong, S. Koscielniak, R. Laxdal, A.K. Mitra, L. Root, G. Stanford, D. Pearce (TRIUMF). LINAC2000-FR102, Aug 2000. 5pp. Invited Talk at the 20th International Linac Conference (Linac 2000), Monterey, California, 21-25 Aug 2000. Published in eConf C000821:FR102,2000 Also in *Monterey 2000, Linac, **2** 1023-1027

ISAC at TRIUMF: Recent Achievements And Future Goals R.E. Laxdal, R. Baartman, P. Bricault, Marik Dombisky, G. Dutto, K. Fong, A. Mitra, R. Poirier, P. Schmor, G. Stanford (TRIUMF), A. Facco (INFN, Legnaro). LINAC2000-MOD17, Aug 2000. 3pp. Presented at the 20th International Linac Conference (Linac 2000), Monterey, California, 21-25 Aug 2000. Published in eConf C000821:MOD17,2000 Also in *Monterey 2000, Linac, **1** 247-249

A Polarized Beams Facility at ISAC C.D.P. Levy, R. Baartman, K. Jayamanna, R. Kiefl, T. Kuo, M. Olivo, G.W. Wight, D. Yuan, A.N. Zelenski, Nuclear Physics A.

Modeling Of Space-Charge Phenomena In Multi-Turn Tracking, R.A. Baartman, M. Dyachkov, F.W. Jones (TRIUMF). Mar 1999. Contributed to IEEE Particle Accelerator Conference (PAC 99), New York, 29 Mar - 2 Apr 1999. Published in *New York 1999, Particle accelerator, **1** 128-130

Design Optimization Of The Proposed ISAC-2 Project at TRIUMF, R.E. Laxdal, R.A. Baartman. Mar 1999. Prepared for IEEE Particle Accelerator Conference (PAC 99), New York, New York, 29 Mar - 2 Apr 1999. Published in *New York 1999, Particle Accelerator, **5** 3537-3539

Beam Test Results With The ISAC 35-MHz RFQ, R.E. Laxdal, R.A. Baartman, L. Root. Mar 1999. Prepared for IEEE Particle Accelerator Conference (PAC 99), New York, New York, 29 Mar - 2 Apr 1999. Published in *New York 1999, Particle Accelerator, **5** 3534-3536 PAC99 Server