

BAARTMAN, Richard A.

Most Significant Research Contributions of last 6 years.

Employment History

2005-present Head, Accelerator Physics group, TRIUMF

Awards, Committees, Service to the community

2005, Jan.	Visiting Scientist, CIAE (China).
2005	Convener, Beam Dynamics session, HPSL2005
2006-2009	Member, Editorial Board, Physical Review Special Topics - Accelerators and Beams
2008	Convener, Beam Dynamics session, HB2008
2008-2009	Program Committee PAC09 (BDEMF session chair)
2009-2012	Vice-Chair, Publications Committee of the Division of Physics of Beams, APS
2009-	Member, Int. Collaboration on Future Accelerators (ICFA) Beam Dynamics Panel
2009	Fellow, American Physical Society
2011	Award: Outstanding Referee, American Physical Society

I designed and we commissioned new beam lines for the Charge state booster[1, 2, 3, 4, 5, 6, 7, 8], the TITAN mass measurement experiment[9], the ISAC-2 experimental hall (MAYA, TUDA, TIGRESS experiments).

We are beginning work on designing a megawatt-class electron accelerator. [10, 11, 12, 13]

A new technique was developed for matching to cyclotrons[14, 15]. The technique used is to calculate the 3D beam envelopes (6 phase space dimensions) including space charge, axial magnetic field, and acceleration at the dee gaps in the cyclotron. The calculation is first order, but contains all the relevant physics of that order: in the cyclotron it includes electric focussing, the gap-crossing resonance, and the radial-longitudinal coupling effect of space charge.

This technique was used to design a completely new vertical section of beam line between the ion source and matching to the cyclotron. The new beamline has been installed, commissioned, and performs in agreement with theory.[16]

We developed and implemented a tomography technique to reconstruct 2-dimensional current density from 1-dimensional projections.[17, 18]

We developed new differential algebra mathematical tools for particle beam optics.[19, 20]

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