# SEKAZI MTINGWA (mtingwa@mit.edu)

## EDUCATION

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|---|---|---|---|
| Ph.D., M.A. | Princeton University | 1976 | Physics |
| B.S. | Massachusetts Institute of Technology | 1971 | Physics |
| B.S. | Massachusetts Institute of Technology | 1971 | Mathematics |

## RESEARCH EXPERIENCES

Accelerator Physics (Theoretical and Experimental)
High Energy Physics (Theoretical and Experimental)
Medium Energy Nuclear Physics (Theoretical and Experimental)

## POSITIONS HELD

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|---|---|
| 2003-Present | Visiting Professor, Harvard University |
| 2001-2003 | Martin Luther King, Jr. Visiting Professor of Physics, MIT |
| Summer 2002 | Dir. of DOE/SLAC Energy Research Undergrad Lab Fellowship Program |
| 1991-Present | Professor of Physics, North Carolina A&T State University (On Leave) |
| 1999-2000 | Prof. and Interim Chair, Dept. of Physics, North Carolina A&T State |
| 1997-1999 | J. Ernest Wilkins, Jr., Distinguished Prof. of Physics, Morgan State |
| 1991-1994 | Professor and Chair, Dept. of Physics, North Carolina A&T State |
| 1988-1991 | Physicist, Argonne Nat'l Lab |
| 1980-1988 | Physicist, Fermi National Accelerator Laboratory |
| 1978-1980 | Postdoctoral Fellow, University of Maryland - College Park |
| 1976-1978 | Research Associate & Part-Time Asst. Prof., Univ. of Rochester |

## HONORS AND AWARDS

Graduated Phi Beta Kappa from MIT
National Society of Black Physicists, Outstanding Service Award, 1996
Martin Luther King, Jr. Visiting Scientist, Wayne State University, 1995
Inductee into the African-American Hall of Fame, Atlanta, GA, 1994
Los Alamos National Laboratory Faculty Fellow, 1994-1996
Named the 1991 DuBois-Padmore-Nkrumah Pan-African Lecturer by the Ghanaian Ministry of Culture and the W.E.B. DuBois Center, Accra, Ghana
Named the 1989 C. Eric Lincoln Lecturer in Social Ethics at Clark-Atlanta University
US/USSR Interacademy Exchange Scholar, 1988-1989: Performed research and gave lectures at the Lebedev Institute (Moscow), the Leningrad Institute of Nuclear Physics, and the Yerevan Physics Institute (Armenia)
Named the 1988 Aggrey-Fraser-Guggisberg Memorial Lecturer by the University of Ghana – Legon. The lectures were cancelled due to student strike at the university.
Outstanding Faculty Award, University of Maryland - College Park, 1980

Ford Foundation Postdoctoral Fellow, 1980-1981

## PROFESSIONAL ORGANIZATIONS

Edward Bouchet – Abdus Salam Institute (EBASI), Member of the Council, 1995-Present
National Society of Black Physicists, served as President and Board Chair, 1992-1994
American Physical Society, Divisions of Beams, Particles and Fields, Plasmas, and Condensed Matter
American Association for the Advancement of Science
Sigma Xi (Scientific Research Society of North America)
National Technical Association

## PROFESSIONAL SERVICE

African Laser Center, Member of Task Team to establish a network of laser research and training centers throughout Africa, 2002
MIT Corporation Visiting Committee, Department of Nuclear Engineering, 2002-Present
U.S. Department of Energy's Nuclear Energy Research Advisory Committee (NERAC), 1998-Present, Member of the Subcommittee on Isotope Research & Production Planning (IRPP) and the Subcommittee on Accelerator Transmutation of Waste. Led the IRPP Site Visits to Brookhaven National Laboratory and Oak Ridge National Laboratory.
Co-Chair of 1999 Annual Conference of Ford Foundation Fellows
Chair of National Research Council Panel for Selecting Ford Foundation Predoctoral Fellowships in the Physical Sciences and Mathematics, 1999-Present
National Research Council Panel for Selecting Postdoctoral Associateships at National Laboratories, 1994-1999
Oak Ridge Associated Universities Panel for Selecting National Science Foundation Graduate Research Fellowships, 1995, 1998-1999, 2001
Saltpond Redevelopment Institute (SRI) Board of Directors and Director of its Education Secretariat, 1998-1990. SRI is a nonprofit organization based in Chicago that promotes the redevelopment of healthcare services, economic enterprises, agricultural methods, and educational programs in Saltpond, Ghana.
Massachusetts Institute of Technology Corporation (Board of Trustees), 1971-1975

## LANGUAGE PROFICIENCIES

French: Good reading, writing, and speaking proficiency
Russian: Good reading, writing, and speaking proficiency
Spanish: Good reading, writing, and speaking proficiency
Italian: Fair reading, writing, and speaking proficiency

## RECENT FUNDING

$40,000, MIT, 2001-2003
$200,000, Department of Energy (Subcontract with Morgan State University), 1997-99
$150,000, Los Alamos Nat'l Lab, For novel materials, 1995-97
$2 Million, NSF Infrastructure Grant, 1994-1997

## SELECTED PUBLICATIONS


S. Mtingwa with the ECFA/DESY Photon Collider Working Group, "TESLA: The Superconducting Electron Positron Linear Collider with an Integrated X-Ray Laser Laboratory, in the Technical Design Report, Part 6, Appendices, Chapter 1, *Photon Collider at TESLA*, DESY 2001-011 (2001).

S. Mtingwa with the E94-018 Jefferson Lab Collaboration, *Measurement of Tensor Polarization in Elastic Electron-Deuteron Scattering at Large Momentum Transfer*, Phys. Rev. Lett. **84**, 5053 (2000).

S. Mtingwa with the E94-018 Jefferson Lab Collaboration, *Phenomenology of the Deuteron Electromagnetic Form Factors*, Eur. Phys. J. **A7**, 421 (2000).

S. Mtingwa and M. Strikman, *Heavy Flavor Production at the Next Linear Collider*, Nucl. Instr. & Methods In Phys. Research **A455**, 50 (2000).

S. Mtingwa with the E94-018 Jefferson Lab Collaboration, *A Precise Measurement of the Deuteron Elastic Structure Function A($Q^2$)*, Phys. Rev. Lett. **82**, 1379 (1999).

S. Mtingwa with the E94-018 Jefferson Lab Collaboration, *Tensor Polarization Measurement in Elastic Electron – Deuteron Scattering at Large Momentum Transfer*, Acta Phys. Pol. **B29**, 3301 (1998).

S. Mtingwa with the E93-018 Jefferson Lab Collaboration, *Longitudinal and Transverse Cross Sections in the $^1$H(e,e'$K^+$) Lambda Reaction*, Phys. Rev. Lett. **81**, 1805 (1998).

S. Mtingwa with the E93-018 Jefferson Lab Collaboration, *Associated Lambda Production at Jefferson Lab*, Nucl. Phys. **A639**, 189c (1998).

S. Mtingwa with the E91-016 Jefferson Lab Collaboration, *Kaon Electroproduction on Deuterium*, Nucl. Phys. **A639**, 197c (1998).

S. Mtingwa, *Theory of the Anisotropic Ferrite Wakefield Accelerator*, Phys. Rev. **A43**, 5581 (1991). (Possible future accelerator technology.)

S. Mtingwa and J. Chiu, *Theory of the Anisotropic Ferrite Wakefield Accelerator II: Higher Order Modes*, Phys. Rev. **A43**, 5590 (1991).

S. Mtingwa and M. Strikman, *B Factory via Conversion of 1 TEV Electron Beams into 1 TEV Photon Beams*, Phys. Rev. Lett**. 64**, 1522 (1990).

L. Gorbunov and S. Mtingwa, *Accelerators of the Future: Alternatives to the Giganticatrons*, in Hypotheses and Prognoses of Future Sciences, a Znanye Publication, Moscow, **23**, 152 (1990).

S. Mtingwa, *Transient Effects in the Plasma Wakefield Acceleration Scheme*, Phys. Rev. **A37**, 1668 (1988). (Substantiated the viability of this scheme that subsequently was verified experimentally.)

S. Mtingwa and J. Bjorken, *Intrabeam Scattering*, Part. Accel. **13**, 115 (1983). (Widely used by accelerator designers.)