Résumé*

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CAREER OBJECTIVE

Faculty Member in Departments of Mathematics or Physics in Universities, Institutes of Technology or Engineering Colleges with teaching and research in Mathematics and Physics.

EDUCATION

Ph.D (Mathematical Physics), The Institute of Mathematical Sciences, Madras, India (1991-1997).
Dissertation: Development of quantum mechanical treatment for the study of transport of charged-particle beams through electromagnetic systems.
Advisor: Professor Ramaswamy Jagannathan.
M.S. (Physics), Indian Institute of Technology (IIT), Kanpur, India (1988-1990).
B.S. Honors (Physics), Osmania University, Hyderabad, India (1985-1988).

Computer Experience: Familiar with UNIX/LINUX, DOS, Fortran, LaTeX, Microsoft Word, Microsoft Excel, Power Point and Web-Designing.

TEACHING EXPERIENCE

Full-time Lecturer Salalah College of Technology, **SCOT**, May-2006 to Present
Middle East College of Information Technology, **MECIT**, September 2003 to May 2006.

Teaching Two-semester sequence of Physics for Engineering; Three-Semester Sequence of Engineering Mathematics (Foundation Mathematics, College Mathematics, Calculus with Numerical Methods and Advanced Calculus) and Two-Semester Sequence of Physics (Physics, Engineering Mechanics and Engineering Physics).

Other activities

- Drafted the syllabus for the new BS Programme.
- Set up the Department Homepage on the College Intranet, which contains in-house prepared *Lecture Notes* and *Question Banks*, meeting most of the requirements of all the courses offered by the department.
- Conducted the *first* Mathematics Olympiad in the College on 26 May 2004.
- Served on several College Committees (*Disciplinary Committee*, *Journal Committee*, *Library Committee*, *Web-Site Committee*, *Prizes and Awards Committee*, and *Accreditation Steering Committee*)

RESEARCH EXPERIENCE

- *CONACYT-UNAM Postdoctoral Fellow*, Centro de Ciencias Físicas, Universidad Nacional Autónoma de México, Cuernavaca, MÉXICO (October 2001 — October 2002).
  Advisor: Professor Kurt Bernardino Wolf.
  Research: Unified treatment of light beam optics and polarization.
- *INFN Post-Doctoral Fellow*, Istituto Nazionale di Fisica Nucleare (INFN), Dipartimento di Fisica Galileo Galilei, Università di Padova, ITALY (October 1997 — October 1999).
  Advisor: Professor Modesto Pusterla.
  Research: Beam Halo Problem.
- **Independent Research** (see the peer-reviewed publications, 6-9 and the Book-Chapter)

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* **Updated on Friday the 28 November 2008.**

HONORS AND AWARDS

Mathematics Olympiads: Won the State Level Mathematics Olympiads at: Junior Level (1983), Senior Level (1985) and Undergraduate Level (1986 to 1988), conducted by The Andhra Pradesh Association of Mathematics Teachers (APAMT), Hyderabad, India.

Young Physicists Colloquium: Invited Lecture at the Young Physicists Colloquium Kolkata (Calcutta), August 1996, Organized by The Indian Physical Society (IPS).

PROFESSIONAL AFFILIATIONS

- American Physical Society
- Optical Society of America
- International Association of Mathematical Physics
- International Radiation Physics Society

PATENTS **Quadricmeter (***in process***, http://www.geocities.com/rohelakhan/quadricmeter.html).**

PUBLICATIONS

BOOK CHAPTERS

- R. Jagannathan and S. A. Khan**, Quantum theory of the optics of charged particles,** *Advances in Imaging and Electron Physics, Editors: P. W. Hawkes, B. Kazan and T. Mulvey*, (Academic Press, San Diego, 1996) **Vol. 97**, pp. 257-358 (1996). (ISBN-10: 0120147394 and ISBN-13: 978-0120147397).
- Sameen Ahmed Khan, **Wavelength-Dependent Effects in Light Optics**, in *New Topics in Quantum Physics Research*, Editors: Volodymyr Krasnoholovets and Frank Columbus, (Nova Science Publishers, New York, 2006, http://www.novapublishers.com/) pp. 163-204 (30 December 2006). (ISBN-10: 1600210287 and ISBN-13: 978-1600210280).
- Sameen Ahmed Khan, **The Foldy-Wouthuysen Transformation Technique in Optics,** *Advances in Imaging and Electron Physics, Editor:* Peter W. Hawkes, (Elsevier, 2008) **Vol. 152**, pp. 49-78 (August 2008). (ISBN-10: 0123742196 and ISBN-13: 978-0-12-374219-3).

PEER-REVIEWED JOURNALS

1. S. A. Khan and R. Jagannathan, **On the quantum mechanics of charged particle beam transport through magnetic lenses,** *Physical Review* **E 51**, 2510-2515 (1995).

2. M. Conte, R. Jagannathan, S. A. Khan and M. Pusterla, **Beam optics of the Dirac particle with anomalous magnetic moment,** *Particle Accelerators* **56**, 99-126 (1996).

3. S. A. Khan and M. Pusterla, **Quantum-like approach to the transversal and longitudinal beam dynamics. The halo problem,** *European Physical Journal* **A 7** No. 4, 583-587 (2000).

4. Sameen Ahmed Khan and Modesto Pusterla, **Quantum approach to the halo formation in high current beams,** *Nuclear Instruments and Methods in Physics Research (NIMS)* **A 464**, 461-464 (2001).

5. Sameen Ahmed Khan and Kurt Bernardo Wolf, **Hamiltonian orbit structure of the set of paraxial optical systems,** *Journal of the Optical Society of America (JOSA)* **A 19** (12), 2436-2444 **(**December 2002**)**.

6. Sameen Ahmed Khan, **Wavelength-dependent modifications in Helmholtz Optics**, *International Journal of Theoretical Physics*, **44** (1), 95-125 (January 2005), (Kluwer Academic Publishers, 2005, https://www.editorialmanager.com/ijtp/).

7. Sameen Ahmed Khan, **An Exact Matrix Representation of the Maxwell's Equations**, *Physica Scripta*, **71** (5), 440-442 (2005). (http://www.physica.org/).

8. Sameen Ahmed Khan, **The Foldy-Wouthuysen Transformation Technique in Optics**, *Optik - International Journal for Light and Electron Optics*, **117**, Issue 10, pp. 481-488 (October 2006) (Elsevier, http://www.elsevier-deutschland.de/ijleo/).

9. Sameen Ahmed Khan, **Maxwell Optics of Quasiparaxial Beams**, *Optik - International Journal for Light and Electron Optics*, **120**, Issue ??, pp. ???-??? (??? 2009) (Elsevier, http://www.elsevier-deutschland.de/ijleo/). (*in press,* **DOI: http://dx.doi.org/10.1016/j.ijleo.2008.07.027**).

10. Sameen Ahmed Khan, **Wavelength-dependent modifications in Maxwell Optics**, (*communicated*).

11. Sameen Ahmed Khan and Modesto Pusterla, **On the form of Lorentz-Stern-Gerlach force,** (*submitted*).

12. Sameen Ahmed Khan, Ramaswamy Jagannathan and Rajiah Simon, **Foldy-Wouthuysentransformation and a quasiparaxial approximation scheme for the scalar wave theory of light beams,** (*submitted*).

The corrections to the traditional descriptions derived in the above articles have a significant bearing on the celebrated Scherzer Theorem in the wavelength-dependent regime in electron microscopy and the algebraically equivalent system of fiber optics. An application for a patent shall be made in the near future!

PUBLICATIONS IN CONFERENCE PROCEEDINGS

1. S. A. Khan and R. Jagannathan, **Theory of relativistic electron beam transport based on the Dirac equation,** *in: Proceedings of the 3rd National Seminar on Physics and Technology of Particle Accelerators and their Applications* **PATPAA-93** (25-27 November 1993, Kolkata (Calcutta)), *Editor*: S. N. Chintalapudi (IUC-DAEF, Kolkata (Calcutta)), pp. 102–107.
2. R. Jagannathan and S. A. Khan, **Wigner functions in charged particle optics,** *in*: Selected Topics in Mathematical Physics–Professor R. Vasudevan Memorial Volume, *Editors*: R. Sridhar, K. Srinivasa Rao, and V. Lakshminarayanan (Allied Publ., Delhi, India 1995), pp. 308-321.
3. R. Jagannathan and S. A. Khan, **Quantum mechanics of accelerator optics,** *ICFA Beam Dynamics Newsletter*, **13**, pp. 21 - 27 (April 1997). (**ICFA**: International Committee for Future Accelerators).
4. S. A. Khan, **Quantum theory of magnetic quadrupole lenses for spin-½ particles,** *in: Proceedings of the 15th Advanced ICFA Beam Dynamics Workshop on Quantum Aspects of Beam Physics*, (4-9 January 1998, Monterey, California USA), *Editor*: Pisin Chen, (World Scientific, Singapore, 1999), pp. 682-694.
5. Sameen A. Khan, **Quantum aspects of accelerator optics** *in*: Proceedings of the *1999 Particle Accelerator Conference* **PAC99**, (29 March - 02 April 1999, New York City, NY), *Editors*: A. Luccio and W. MacKay, (IEEE Catalogue Number: 99CH36366) pp. 2817-2819.
6. Sameen A. Khan and Modesto Pusterla, **Quantum mechanical aspects of the halo puzzle,** *in*: Proceedings of the *1999 Particle Accelerator Conference* **PAC99** (29 March - 2 April 1999, New York City, NY), *Editors:* A. Luccio and W. MacKay, (IEEE Catalogue Number: 99CH36366) pp. 3280-3281.
7. Sameen A. Khan and Modesto Pusterla, **Quantum-like approaches to the beam halo problem,** *in*: Proceedings of the *6th International Conference on Squeezed States and Uncertainty Relations* **ICSSUR'99**, (24-29 May 1999, Napoli, Italy, *Editors*: D Han, Y S Kim, and S Solimeno, (*NASA Conference Publication Series* 2000-209899) pp. 438-441 (July 2000).
8. S. A. Khan, **Quantum formalism of beam optics**, *in*: *Proceedings of the 18th Advanced ICFA Beam Dynamics Workshop on Quantum Aspects of Beam Physics* (15-20 October 2000, Capri, Italy), *Editor*: Pisin Chen, (World Scientific, Singapore, June 2002). pp. 517-526.
9. Sameen Ahmed Khan, **The World of Synchrotrons,** *Resonance Journal of Science Education*, **6** (11), 77-84 (November 2001), (Publication of the Indian Academy of Sciences, Copublished with Springer).
10. Sameen Ahmed Khan, **Analogies between light optics and charged-particle optics,** *ICFA Beam Dynamics Newsletter*, **27**, 42-48 (June 2002). (**ICFA**: International Committee for Future Accelerators).
11. Sameen Ahmed Khan, **Spherometer and Cylindrometer**, (*communicated*). The article discusses the traditional spherometer and some variants such as the ring spherometer and the cylindrometer (also known as Cylindro-Spherometer), fabricated by the author.

E-PRINTS

1. Sameen Ahmed Khan, **An Alternate way to obtain the aberration expansion in Helmholtz Optics**, http://arxiv.org/abs/physics/0210001/
2. Sameen Ahmed Khan, **Wavelength-Dependent effects in Maxwell Optics**, http://arxiv.org/abs/physics/0210027/

POPULAR WRITINGS: Over a hundred **REFERENCES:** Available on request.