

Curriculum vitae

Name: Michael Allan Raadu

Title: Dr.

Business address: Division of Space and Plasma Physics, School of Electrical Engineering, Royal Institute of Technology, SE-100 44 Stockholm, Sweden, telephone: + 46 8 790 7632, telefax: + 46 8 245 431

Date and place of birth: November 23, 1943, Hull, England

Civil status: Married

1. Academic Degrees

1965 Bachelor of Arts (Mathematics Tripos Part II), University of Cambridge.
1966 Mathematics Tripos Part III, University of Cambridge.

2. PhD Examination

1969 PhD in Astronomy, Department of Astronomy, Manchester University.
(29 September 1969).

3. Post Doctoral Positions

Oct 1969 - Visiting Scientist, High Altitude Observatory, Boulder, Colorado, USA.
- June 1971
Aug 1971 - ESRO-fellowship, Astronomical Institute, University of Utrecht, Netherlands
- July 1972
Aug 1972 - Wetenschappelijk medewerker, Astronomical Institute, University of Utrecht,
- Aug 1973 Netherlands
Oct 1973 - ESRO-fellowship, Department of Plasma Physics, KTH, Stockholm
- Sep 1975

4. Docent

1975 Docent in Plasma Physics, Royal Institute of Technology (KTH).

5. Present Position

Jan 1988 --- University Lecturer (högskolelektor), Div. Plasma Physics, Alfvén Laboratory.

6. Previous Academic Positions

Feb 1975 - forskningsassistent, Department of Plasma Physics, KTH, Stockholm
- Nov 1975
Dec 1975- l.e forskningsassistent, Department of Plasma Physics, KTH, Stockholm
- Jan1988

7. Absence from Research Career - NONE

8. Main Supervisor for PhD Student

2001 - 2006 Supervisor of PhD student Muhammad Shafiq (licenciate: 2005, PhD: 2006).

Research Activity

Oct 1966 - - - Solar Physics Theory (prominences), Magnetohydrodynamics.
Feb 1975 - - - Theoretical Plasma Physics with applications to laboratory experiments.
Dec 1976 - - - Co-applicant for NFR grants for experimental and theoretical research in Plasma Physics.
2001 - - - Physics of Dusty Plasmas
2003 - - - Collaboration between KTH and Linköping University on magnetron development.

Teaching Activity

1972 Course in astrophysical plasmas at Astronomical Institute, University of Utrecht.
1981 - 1982 Undergraduate course: Introduction to Plasma Physics, KTH.
1995 -- Undergraduate course: Plasma Physics - continuation course, KTH. Development of this new course and writing a compendium (Plasma Physics Part II).
ca 1990 -- Graduate course on kinetic theory of plasmas. Various graduate literature based courses (These are given when the need arises).
2001 -- Undergraduate examples classes in electromagnetic field theory.

Supervision of Master and Doctorate Studies

1995 Supervisor of Master of Science thesis by Deny Åberg.
2004 Supervisor of Master of Science thesis by Per-Ola Svensson.
1999 - 2004 Co-supervisor of PhD student Tomas Hurtig (PhD: 2004).
2001 - 2006 Supervisor of PhD student Muhammad Shafiq (licenciate: 2005, PhD: 2006).

Other Professional Activities

- External examiner (opponent) at PhD defences: 15 September 1983 (Miro Bures, KTH) and 29 November 1985 (Krzysztof Stasiewicz, IRF, Kiruna).
- Member of the examination board (ledamot av betygsnämnd) at PhD defences: October 1979 (Christer Nyberg, KTH), November 1995 (Lars Uby, Uppsala), January 2003 (Yuri Khotyaintsev, Uppsala), March 2004 (Boris Gudiksen, Stockholm University), June 2004 (Jan-Ove Hall, Uppsala), April 2007 (Tommy Bergkvist, KTH).
- Expert evaluation of FD Tord Oscarsson's application for a "docentur i rymdfysik" at Umeå University (February 1997).
- External examiner for a Master of Science Thesis by Greer Gray, Autumn 1998 (University of Natal, Durban, South Africa).
- Four confidential evaluations (January 1997, February 1998, June 2007, July 2007) of scientific research productivity for applicants to FRD (Foundation of Research Development, Pretoria, South Africa)
- Evaluation of proposals for NATO Collaborative Research Grant (Two Dimensional Models for Solar Prominences, nr 901002, Aug 1990) and to Netherlands Foundation for Research in Astronomy (NFRA) (Formation and Evolution of Accretion Disk Coroneae, nr 371-goN-04, Sep 1989).
- Member of a commission "beredningsgrupp 3" under NFR's standing committee for Physics and Mathematics 1992 - 1994.
- Engaged as a referee for many international scientific journals e.g. Astronomy and Astrophysics, Astrophysical Journal, Astrophysics and Space Science, Journal of Geophysical Research, Journal of Physics A, Journal of Physics D, Journal of Plasma Physics, New Journal of Physics, Physics of Plasmas, Physica Scripta, Plasma Physics and Controlled Fusion, Solar Physics.

9. Publications

Five most cited articles (Google Scholar)

- I) Kuperus, M. and Raadu, M.A. 1974: The Support of Prominences Formed in Neutral Sheets, *Astron. Astrophys.*, **31**, 189-193 [number of citations: 164]
- II) Raadu, M.A. 1989: The Physics of Double Layers and their Role in Astrophysics, *Phys. Reports*, **178**, 25-97 [number of citations: 120]
- III) Nakagawa, Y. and Raadu, M.A. 1972: On Practical Representation of Magnetic Field, *Solar Phys.*, **25**, 127-135 [number of citations: 96]
- IV) Raadu, M.A. 1972: Suppression of the Kink Instability for Magnetic Flux Ropes in the Chromosphere, *Solar Phys.*, **22**, 425-433 [number of citations: 70]
- V) Nakagawa, Y., Raadu, M.A., Billings, D.E. and McNamara, D. 1971: On the Topology of Filaments and Chromospheric Fibrils near Sunspots, *Solar Phys.*, **19**, 72-85 [number of citations: 53]

Peer-reviewed articles 2002 - 2009:

1. Shafiq, M. and M. A. Raadu, Test Charge Response of a Dusty Plasma with a Grain Size Distribution, *Phys. Lett. A*, 305, 79-86, 2002. [number of citations: 0]
2. T. Hurtig, N. Brenning and M. A. Raadu, Three-Dimensional Electrostatic Particle-in-cell Simulation with Open Boundaries Applied to a Plasma Beam Entering a Curved Magnetic Field, *Physics of Plasmas*, 10, 4291-4305, 2003. [number of citations: 6]
3. Raadu, M. A., Generalised Sagdeev Potentials for Dusty Plasmas with Varying Grain Charges, *Physica Scripta*, 68, 266-270, 2003. [number of citations: 1]
4. Raadu, M. A. and M. Shafiq, Shielding of a Slowly Moving Test Charge in a Dusty Plasma with Dynamical Grain Charging, *Phys. Plasmas*, 10, 3484-3491, 2003. [number of citations: 10]
5. Shafiq, M. and M. A. Raadu, Delayed Shielding of a Test Charge due to Dynamical Grain Charging in a Dusty Plasma, *IEEE Trans. Plasma Sci.*, 32, 627-631, 2004. [number of citations: 7]
6. Hurtig, T., N. Brenning, M. A. Raadu, The Penetration of Plasma Clouds Across Magnetic Boundaries: The Role of High Frequency Oscillations, *Phys. Plasmas*, 11, L33-L40, doi: 10.106, 2004. [number of citations: 11]
7. Hurtig T, Brenning, N., and Raadu, M. A., The Role of High Frequency Oscillations in the Penetration of Plasma Clouds Across Magnetic Boundaries, *Phys. Plasmas*, 12, 012308, 2005. [number of citations: 14]
8. Brenning, N., Hurtig, T., and Raadu, M. A., Conditions for Plasmoid Penetration Across Abrupt Magnetic Barriers, *Phys. Plasmas*, 12, 012309, 2005. [number of citations: 13]

9. Nils Brenning, Ingvar Axnäs, Michael Raadu, Einar Tennfors, Mark Koepke, Radiation from an electron beam in a magnetized plasma: Whistler mode wave packets, *Journal of Geophysical Research - Space Physics*, 111, A11212, 2006. [number of citations: 0]
10. M. Shafiq, M. A. Raadu, Effect of grain charging dynamics on the wake potential of a moving test charge, *Physics of Plasmas*, 14, 012102, 2007. [number of citations: 1]
11. M. A. Raadu, M. Shafiq, Test charge response for a dusty plasma with both grain size distribution and dynamical charging, *Physics of Plasmas*, 14, 012105, 2007 [number of citations: 1]
12. Brenning, N, Axnäs, I., Raadu, M. A., Lundin, D., and Helmersson, U., A Bulk Plasma Model for dc and HiPIMS magnetrons, *Plasma Sources Sci. Technol.*, 17(4), 045009, 2008 [number of citations: 0]

Submitted to peer-reviewed journals:

13. D. Lundin, N. Brenning, D. Jädernäs, P. Larsson, E. Wallin, M. Lattemann, M.A. Raadu, U. Helmersson, Transition between the discharge regimes of high power impulse magnetron sputtering and conventional direct current magnetron sputtering, submitted to *Plasma Sources Sci. Technol.*, Feb 11, 2009.

Peer-reviewed conference contributions 2002 - 2009:

Conference contributions with peer-reviewed documents:

1. Mirza, M., M. Shafiq, M. A. Raadu, and K. Khan, Chaotic Behavior of Electron-Positron Dusty Magnetoplasma with Equilibrium Flows, in *Dusty Plasmas in the New Millenium, Proc. of the Third International Conference on the Physics of Dusty Plasmas (ICPDP-2002)*, Durban, South Africa, 20-24 May 2002, Ed. R. Bharuthram, M. A. Hellberg, P. K. Shukla, and F. Verheest, Conference Proceedings Series, American Institute of Physics, 649, 426-429, 2002.
2. Raadu, M. A. and M. Shafiq, Effect of Grain Charging Dynamics on the Response of a Dusty Plasma to a Moving Test Charge, in *Dusty Plasmas in the New Millenium, Proc. of the Third International Conference on the Physics of Dusty Plasmas (ICPDP-2002)*, Durban, South Africa, 20-24 May 2002, Ed. R. Bharuthram, M. A. Hellberg, P. K. Shukla, and F. Verheest, Conference Proceedings Series, American Institute of Physics, 649, 430-433, 2002.
3. Shafiq, M. and M. A. Raadu, Electrostatic Response of a Dusty Plasma with a Grain Size Distribution to a Moving Test Charge, in *Dusty Plasmas in the New Millenium, Proc. of the Third International Conference on the Physics of Dusty Plasmas (ICPDP-2002)*, Durban, South Africa, 20-24 May 2002, Ed. R. Bharuthram, M. A. Hellberg, P. K. Shukla, and F. Verheest, Conference Proceedings Series, American Institute of Physics, 649, 422-425, 2002.
4. M. A. Raadu and M. Shafiq, Charge Fluctuation Effects On Solitary Waves, 4th International Conference on the Physics of Dusty Plasmas, Orléans, 13 - 17 June 2005, *New Vistas in Dusty Plasmas*, Vol. 799, 486-489, 2005.

5. M. Shafiq and M. A. Raadu, Energy Loss of Test Charges in a Dusty Plasma, 4th International Conference on the Physics of Dusty Plasmas, Orléans, 13 - 17 June 2005, New Vistas in Dusty Plasmas, Vol. 799, 490-493, 2005.

6. M. A. Raadu, Muhammad Shafiq, Test Charge Response for a Dusty Plasma with Size Distribution and Charging Dynamics, Proceedings for the 13th International Congress on Plasma Physics (ICPP), May 22-26, 2006, Kiev, Ukraine, May 2006.

Conference contributions with peer-reviewed abstracts:

7. Raadu, M. A., Plasma Dielectric for a Dusty Plasma with Mass Distribution and Charge Fluctuations, in Proc. URSI - XXVII General Assembly, Maastricht, the Netherlands, 17-24 August 2002 (CD-ROM), 128 (paper 152 - HGE), 2002.

8. Shafiq, M. and M. A. Raadu, Effect of a Grain Size Distribution on the Response of a Dusty Plasma to a Moving Test Charge, in Proc. URSI - XXVII General Assembly, Maastricht, the Netherlands, 17-24 August 2002 (CD-ROM), 128 (paper 501 HGE2), 2002.

9. Shafiq, M. and M. A. Raadu, Wake Potential of a Moving Test Charge in a Dusty Plasma with Dynamical Grain Charging, in Proc. 31st EPS Conf. on Plasma Phys., London, 28 June - 2 July 2004, ECA Vol. 28G, P-4.074 (4 pp.), 2004.

10. Raadu, M. A. and M. Shafiq, Potential of a Moving Test Charge in a Dusty Plasma in the Presence of Grain Size Distribution and Grain Charging Dynamics, in Proc of 12th Int. Congress on Plasma Physics, 25-29 October 2004, Hyper Article en Ligne, <http://hal.ccsd.cnrs.fr/ccsd-00003135/en/> , 10 pp., 2004.

11. Brenning, N., M. E. Koepke, I. Axnäs, and M. A. Raadu, Electromagnetic Radiation from Double Layers, in Proc of 12th Int. Congress on Plasma Physics, 25-29 October 2004, Hyper Article en Ligne, <http://hal.ccsd.cnrs>, 2004.

12. Brenning, N., T. Hurtig, and M. A. Raadu, Conditions for Diffusive Penetration of Plasmoids Across Magnetic Barriers, in Proc of 12th Int. Congress on Plasma Physics, 25-29 October 2004, Hyper Article en Ligne, <http://hal.ccsd.cnrs>, 2004.

13. Hurtig, T., N. Brenning, and M. A. Raadu, The Penetration of Plasma Clouds Across Magnetic Boundaries: The Role of High Frequency Oscillations for Magnetic Diffusion, in Proc of 12th Int. Congress on Plasma Physics, 25-29 October 2004, Hyper Article en Ligne, <http://hal.ccsd.cnrs>, 2004.

14. M. A. Raadu and M. Shafiq, Wake potential of a test charge using the stationary phase method, in Proc. 32nd EPS Conf. on Plasma Physics, Tarragona, Spain, 27 June - 1 July 2005, Vol. 29C, P-5.119 (4 pp.), 2005.