Curriculum vitae

(December 26, 2012)

Name: SAZHIN, Sergei Stepanovich

Nationality: British

Home address:
8 Brambletyne Avenue
Saltdean, East Sussex BN2 8EJ, U.K.
Tel: +44 - 1273 - 300548

Work address:
School of Computing, Engineering and Mathematics
Faculty of Science and Engineering
University of Brighton
Cockcroft Building
Brighton BN2 4GJ
UK
Tel: +44 - 1273 - 642677
Fax: +44 - 1273 - 642309
E-mail: S.Sazhin@brighton.ac.uk

Education: 1966 –72: Undergraduate, St. Petersburg State University, Russia

Qualifications:
1971: Certificate in military engineering (radar equipment)
St. Petersburg State University, Russia
1972: Diploma of Higher Education (Physics),
St. Petersburg State University, Russia
1977: Diploma of the Candidate of Physical and Mathematical
Sciences, St. Petersburg State University, Russia
1992: Certificate in Educational Studies, Sheffield University, UK
1992: Member of the Institute of Physics (UK) and
a Chartered Physicist
1994: Fellow of the Institute of Physics (UK)
1997: Accreditation as a teacher in Higher Education, SEDA
1997: Postgraduate Certificate in Teaching and Learning
in Higher Education, University of Brighton
2010: University Cert in Intermediate Languages Hesa Reference 9610510021841
Intermediate French, University of Brighton (with Distinction)

Current Appointment:
June 2002 – present: Professor of Thermal Physics,
School of Computing, Engineering and Mathematics,
Faculty of Science and Engineering
The University of Brighton

Previous Appointments:
1972 – June 82: Research Worker, Institute of Physics,
St. Petersburg State University, Russia
1982 – 88: Private Scientist, St. Petersburg, Russia
May 1988 – Nov 92: Research Fellow, Department of Physics,
Sheffield University, UK (funded by SERC and NERC)
Nov 1992 – Sep 96: Research Scientist, FLUENT EUROPE Ltd
Computational Fluid Dynamics Software
and Consultancy Services, Sheffield, UK
Sep. 96 – June 02: Senior Lecturer, School of Engineering
The University of Brighton

Teaching Experience: I have developed and delivered lecture courses in Fluid Mechanics, Computational Fluid Dynamics, Heat Transfer, Thermofluids, Combustion and Fuels, Core Science, Engineering Science, Electrical Phenomena at the University of Brighton. I also developed and delivered lecture courses in Theoretical Physics (complex analysis and contour integration) and Wave Dynamics in the Magnetosphere at the University of Sheffield.

Postgraduate Supervision: Twelve successful PhD completions during the period 2000-2012 (MY Sulaiman (Malaysia) (2000), S Savic (Yugoslavia) (2000), G Feng (China) (2001), D Kennaird (UK) (2001), C Crua (France) (2002), S Hawat (Libya) (2002), C Deligiannis (Greece) (2003), W Abdelghaffar (Egypt) (2005), S Shevelko (Russia) (2006), T Kristyadi (Indonesia) (2007), I Gusev (Russia) (2012), A Elwardany (Egypt) (2012). The main supervisor of two doctoral students: Mr J Xei and Mr M Al-Qubeissi.

Examining: External examiner of PhD theses in the UK (Miss Y Kenyon (University of Central Lancashire, UK) (2003), Ms Fang Li (University of Central Lancashire, UK) (2003)) and overseas (France (Mr B Ravary, Ecole des Mines de Paris, 1999; Mr N Baricault, l'Université de Rouen, 2005; Mr C Maqua, Institut National Polytechnique de Larraine, 2007; Mme Valérie Depredurand, Institut National Polytechnique de Larraine, 2009; Mr Vahid Ebrahimian, IFP Energies nouvelles, 2011), Sweden (Mr T Nilsson, Lund Institute of Technology, 2003), Estonia (Mr S Tisler, Tallinn University of Technology, 2006), Israel (Mr D Katz, Ben Gurion University, 2006; Mr Ophir Nawe, Ben Gurion University, 2010), India (Mr D K Singh, Banaras Hindu University, 1999), Russia (Mr Khruschinsky and Mrs Volosevich, the University of St. Petersburg, around 1980)). I have also been internal examiner at the University of Brighton (Mr X Boissieux (1999); Mr N Douch (2002); Mr Philip Newman (2012)) for PhD.

Editorial Board and refereeing:

Member of the Editorial Advisory Boards of *Planetary and Space Science* (1992–1995), *International Journal of Engineering Systems Modelling and Simulation* (2007– present) and *Journal of Irrigation and Drainage Systems Engineering* (2012-present).
I have also been invited to referee EPSRC proposals and papers submitted to *Combution Theory and Modelling*, *Journal of Quantum Electronics*, *Journal of Atmospheric and Terrestrial Physics*, *Journal of Plasma Physics*, *Journal of Geophysical Research*, *Geophysical Research Letters*, *Annales Geophysicae*, *ASME Journal of Heat Transfer*, *International Journal for Numerical Methods in Fluids*, *International Journal of Heat and Mass Transfer*, *International Journal of Heat and Fluid Flow*, *Heat Transfer Engineering*, *Journal of Technical Physics*, *International Journal of Heat Exchangers*, *Fuel*, *The Indian Journal of Radio and Space Physics*, *Experimental Thermal and Fluid Science*, *International J Thermal Science*, *J Multiphase Flow*, *Journal of Biomaterials*, *Microfluids and Nanofuids*, *International Journal of Engineering Systems Modelling and Simulation*, *International Communications in Heat and Mass Transfer*, *Meccanica*, *J Applied Physics*, *J of Automibile Engineering*, *Fire Safety Journal*, *International Journal of Molecular Sciences*, *J Aerosol Science*, *Applied Mathematics and Computation*, *Applied Mathematical Modelling*, *Journal of Zhejiang University-SCIENCE A*, *Int. Journal for Numerical Methods in Engineering*, *AIP Advances*, *Energies*, *Atomization and Sprays*, *Irrigation & drainage Systems Engineering*, *International Journal of Numerical Methods for Heat and Fluid Flow*, *Journal of Chemical Engineering of Japan* and numerous conference proceedings.

Language proficiency:

Besides Russian and English I am also acquainted with French (intermediate level). I have a basic knowledge Polish, Bulgarian and German.

Funding:

Current Research Projects: Development of the full Lagrangian approach for the analysis of vortex ring-like structures in disperse media: application to gasoline engines (2013-2016), funded by EPSRC); Biofuel spray injection modelling (2012-2013, funded by Zhytomyr State Technological University, Ukraine); Investigation of heating and evaporation of multi-component droplets (2012-2015, funded by the University of Brighton); Molecular dynamics simulation of complex molecules using quantum-chemical potentials: application to modelling fuel droplets (2012-2015, funded by EPSRC); Development of a new quantitative kinetic model for the analysis of heating and evaporation processes in complex hydrocarbon fuel droplets (2010-2013), funded by EPSRC).

:

Previous Grants:
Cross-Channel Centre for low Carbon Combustion (C5) (2009-2012, funded by INTERREG IVA). Modelling of breakup processes in transient Diesel fuel sprays (2009-2012, funded by EPSRC). A Fundamental Study of the Novel Poppet Valve 2-Stroke Autoignition Combustion Engine (2-ACE) (2008-2012, funded by EPSRC). A universal spray model for engineering applications (2010-2012), funded by the Royal Society (UK) and Russian Foundation for Basic Research. Development of new physical and mathematical models for fuel spray autoignition (2007-2009, funded by the Royal Society). Research Exchanges with China (2009, funded by RAE. A kinetic algorithm for modelling the droplet evaporation process in the presence of a heat flux and background gas (2007-2008, funded by EPSRC). Vortex rings in gasoline fuel sprays (2007-2008, funded by EPSRC). Les Sprays (2005-2007, funded European Regional Development Fund, Franco-British INTERREG IIIa) EPSRC grants: GR/R51711 (2001), GR/S98368/01 (2004), EP/C527089/1 (2005), EP/D002044/1 (2006). For details see

`http://gow.epsrc.ac.uk/ViewPerson.aspx?PersonId=50959`

Funding from the Science Networking Development Scheme (SNDS), which is managed and supported by the British Council in Israel, allowed me to organise a workshop on sprays. See

`http://www.brighton.ac.uk/shrl/shrl/events/UK-Israel-2007/index.php`

for details. The analysis of multi-phase jets and mixing zones (2012), funded by the Royal Academy of Engineering (UK).

Publications:

Author of over 390 papers in the area of physics and engineering, including 2 monographs and 199 papers in international refereed journals. See

`http://www.brighton.ac.uk/shrl/staff/sazhin.php`

for details.

Invited lectures (2006-12):

'Droplet heating and evaporation - recent results and unsolved problems'. Keynote lecture at ICHMT (International Symposium on Advances in Computational Heat Transfer), July 1-6, 2012, Bath, England.

'Advanced models for droplet heating and evaporation'. Invited lecture at Universiti Teknologi Petronas (Malaysia), 8th June 2012.

'Advanced models for droplet heating and evaporation'. Invited lecture at Stefan cel Mare University of Suceava (Romania), 25th May 2012.

'Modal and non-modal stability of round viscous jets'. Invited presentation at 6th International workshop on multi-rate processes and Hysteresis (MURPHYS), 22nd May 2012, Stefan cel Mare University of Suceava (Romania).

'Heating and evaporation of mono- and multi-component droplets: hydrodynamic and kinetic models'. Keynote lecture at International Symposium on Multiphase flow and Transport Phenomena, April 25, 2012, Agadir, Morocco.

'Engineering mathematics versus computational fluid dynamics'. Presentation at the 'Nonlinear Dynamics Conference in Memory of Alexei Pokrovskii', University College Cork, Ireland, September 5-9, 2011.

'Modelling droplet heating and evaporation'. Presentation at 'Baltic Heat Transfer Conference 6th BHTC', August 24-26, 2011 in Tampere, Finland.

'Advanced models for droplet heating and evaporation'. Keynote speach at the World Congress on Engineering WCE, London, U.K., 6 July, 2011.

'Mathematical modelling of droplet heating and evaporation: recent results and unsolved problems' Seminar at School of Mathematics, University of Birmingham, 13th May 2011.

'Hydrodynamic stability and internal combustion engines'. Presentation at the Hydrodynamic Stability meeting 14-15 February 2011, University of Keele.

'Advanced models for droplet heating and evaporation'. Presentation at the UniICEG meeting 21st September 2010, University of Brighton.

'Advanced models for droplet heating and evaporation'. (Invited lecture at the Instiute of Mathematics), September 9, 2010, Prague, Czech Republic.

'Advanced models for droplet heating and evaporation'. (Invited lecture at Karlsruhe Institut für Technologie), July 22, 2010, Karlsruhe, Germany.

'Transient unstable jets: mathematical analysis and applications'. (Invited lecture at International Workshop on Multi-Rate Processes & Hysteresis. University Pecs, Hungary), May 31 – June 3, 2010 (with J Healey and M Turner).

'Advanced models for droplet heating and evaporation'. (Invited lecture at DIPSI Workshop 2010 on Droplet Impact Phenomena & Spray Investigation May 28, 2010, Bergamo, Italy.

'Advanced models for droplet heating and evaporation'. (Invited lecture at the University College of Cork, Ireland), 25 March 2010.

'Sprays in Diesel and gasoline engines'.(Invited lecture at the University of Limerick, Ireland), 26 March 2010.

'Evaporation of droplets into a background gas: hydrodynamic and kinetic modelling'. (Invited lecture at the St Petersburg State Polytechnic University), 10 July 2009.

'Diesel and gasoline fuel sprays: modelling and experimentation'. (Invited lecture at the Department of Automotive Engineering, Tsinghua University, Beijing, China), 27 May 2009.

'Evaporation of droplets into a background gas: hydrodynamic and kinetic modelling'. (Invited lecture at the Department of Engineering Mechanics, Tsinghua University, Beijing, China), 27 May 2009.

'Modelling of droplet heating and evaporation in computational fluid dynamics codes'. (Invited lectures in three research centres in Moscow, Russia Central Aerodynamic Laboratory, Moscow Power Engineering Institute, Moscow State University) 5-8 November 2008.

'Modelling of droplet heating and evaporation in computational fluid dynamics codes'. (Invited lecture at Fourth International PhD, DLA Symposium, University of Pecs, Pollack Mihaly Faculty of Engineering, Hungary), October 20-21 2008.

'Spray dynamics as a multi-scale process'. (Invited lecture at International Workshop on Multi-Rate Processes & Hysteresis. University College Cork, Ireland), March 31 – April 5, 2008.
'Evaporation of droplets into a background gas: hydrodynamic and kinetic modelling' (Keynote lecture at 19th National & 8th ISHMT-ASME Heat and Mass Transfer Conference, 3-5 January 2008, Hyderabad, India).
'Modelling of the processes in droplets and sprays' (Invited lectures at Indian Institute of Science, Bangalore (16 March 2006), Indian Institute of Technology, Bombay (19 March 2007) and the University of Keele, UK (28 March 2007)).
'Spray modelling: recent results and unsolved problems' (Invited lecture at 'Air Products', Singapore, 24 August 2006).
'Multiple Scales in Spray Modelling' (Invited lecture at 'Workshop on Multi-Rate Processes & Hysteresis - April 3–8, 2006, University College Cork, Cork, Ireland, 3-8 April 2006).
'Spray modelling: recent results and unsolved problems' (Invited lecture at School of Mathematics Faculty of Engineering and Physical Sciences, the University of Manchester, 1 March 2006) and Talinn Technical University (Estonia), 9 June 2006.

International collaboration: Member of scientific committee of the International Workshops on Hysteresis & Multi-Scale Asymptotics (Cork (Ireland), Pec (Hungary) Suceava (Romania), Berlin (Germany) 2004, 2006, 2008, 2010, 2012, 2014), 6th Baltic Heat Transfer Conference (Tampere, Finland, August 24-26, 2011) and International Symposia on Multiphase Flow and Transport Phenomena (Agadir, Morocco, April 22-25, 2012; Hammamet, Tunisia, 17-20 April 2014). Member of scientific committee of the French program 'Methods of experimental analysis and simulations of a multi-component mist' (since 2009). Session organiser at 21th International Symposium on Transport Phenomena, November 2010, Kaohsiung City, Taiwan. Numerous joint projects and papers with international collaborators.

Awards: My paper published in *International Journal of Numerical Methods for Heat and Fluid Flow*, **10** (1), 6–46, was selected by *Literati Club* as the most 'Outstanding Paper' in the 2000 volume.

Research in Progress: Numerical and asymptotic modelling of fluid dynamics, heat/mass transfer, and combustion processes in Diesel and gasoline sprays.