

CURRICULUM VITAE (2016)

IVAN EGOROV



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EDUCATION

PhD in physics (majoring in Physics of charged particle beams and accelerating technologies), Laboratory of Beam and Plasma Technologies at Tomsk Polytechnic University, Tomsk, Russia, September 2015.

Phd Thesis title: «Development of a pulsed accelerator with the delayed electron emission in diode»;

Diploma in Electrical Engineering, Tomsk Polytechnic University, Institute of Electrical Engineering, specialty “Electric power supply of industrial plants”, September 2005 - June 2009;

ADDITIONAL EDUCATION AND TRAINING

Technician qualification in "Power plants network and systems", Tom-Usinsk college of power engineering, September 2002- July 2005.

Certificate of completion of course “RF and HPM Sources”, San Diego, 2012 IEEE International Power Modulator and High Voltage Conference;

PROFESSIONAL/RESEARCH EXPERIENCE

May 2013 – Present Researcher, Laboratory of Beam-Plasma Technologies, Tomsk Polytechnic University, Tomsk, Russia;

July 2009 – May 2013 Research Engineer, Laboratory of Beam-Plasma Technologies, Tomsk Polytechnic University, Tomsk, Russia;

June 2008 – July 2009 Technician in Laboratory of Beam-Plasma Technologies, Tomsk Polytechnic University, Tomsk, Russia.

LAB EXPERIENCE AND SKILLS

Developed pulse power generators and spark gaps for electro-explosive technologies;

Developed pulsed repetitive electron accelerators (0.3-0.5 MeV) for research and industrial application;

Designed pulse power source for repetitive electron accelerator, which is based on pseudo spark switch (PSS) with the self-triggered starting system.

Designed high voltage bushing for repetitive electron accelerator (up to 475 keV, 1 kA, 250 ns, 40 pps);

Designed vacuum case (10^{-6} Torr) for the electron diode that can be located into the local lead X-ray shielding;

Designed accelerator exit window for electron beam (0.3 MeV, 10 J/pulse) repetitive (40 pps) ejection;

Designed high voltage bushing for electron/ion pulse accelerator (0.3-0.4 MeV, 10 kA, 20 ns);

Designed three electrodes spark gap for 150 ns 300 keV ion accelerator started by field distortion;

Excellent skills in CAD designing (Auto CAD, Inventor, Solid Works);

Electric circuit calculation and simulation (Multisim);

Fields calculation and simulation (Elcut – finite elements method), optimization of high voltage bushings and spark gaps geometry.

Data analysis in Origin;

Hands-on experience with high power (up to 10 GW) high voltage (up to 700 kV) high replate (up to 100 pps) pulsed generators, vacuum diodes (mainly with explosive emission plasma sources) and vacuum preparation systems (10^{-6} Torr).

PROFESSIONAL AWARDS AND SCHOLARSHIPS

Russian president scholarship for young scientists;
Gold prize of National Science and Technology Fair 2013 by The National Research Council of Thailand for commending excellent and creative effort to invent Technological complex for purification and disinfection of domestic and industrial-municipal wastewater.

CURRENT RESEARCH FIELDS

Electron beam applications;
Injection of pulsed electron beams into the atmosphere;
Lifetime of field-emission cathodes for vacuum electron diodes;
Infrared diagnostics of electron beams ejected to the atmosphere.

FUNDED RESEARCH

On-going

Principal researcher

Personal grant from Russian Found for Basic Research (RFBR) "Investigation of the delay mechanism of emitting surface formation in a vacuum electron diode in a case of structural parasitic elements in a circuit of the nanosecond electron accelerator ", from January 2016 with duration of 2 years, financed in \$7000 per year.

Member of scientific team

Grant from Russian Found for Basic Research (RFBR) "Development of theoretical model of pulsed electron beam spread in chemically active gases at high pressure ", from January 2016 with duration of 2 years, financed in \$7000 per year.

Finished

Member of scientific team

Private investments for development of electron/ion pulsed accelerator (0.3-0.4 MeV, 10 kA, 20 ns), 2013;
Private investments for development of pulsed repetitive electron accelerators (0.3-0.5 MeV, 1 kA, 250 ns, 40 pps), 2010-2014.
Grant from Russian Found for Basic Research (RFBR) "Investigation of ion beam divergence in self-magnetically insulated diodes ", from July 2013 with duration of 2 years, financed in \$5000 per year. 2013-2014;

MOST SIGNIFICANT PUBLICATIONS (SCOPUS ID 55788116800)

1. Egorov I.S. Principle and simulation of a high voltage bushing for a repetitive electron accelerator (2016) IEEE Transactions on Dielectrics and Electrical Insulation, 23 (4), art. no. 7556492, pp. 2174-2180. DOI: 10.1109/TDEI.2016.7556492;
2. Egorov I.S., Esipov V.S., Lukonin E.I., Poloskov A.V. A self-triggering system for a cold-cathode thyratron in a pulse voltage generator (2015) Instruments and Experimental Techniques, 58 (1), pp. 64-66. DOI: 10.1134/S0020441215010169;
3. Egorov I. Note: Numerical simulation and experimental validation of accelerating voltage formation for a pulsed electron accelerator (2014) Review of Scientific Instruments, 85 (6), art. no. 066112. DOI: 10.1063/1.4884895;
4. Egorov I., Esipov V., Remnev G., Kaikanov M., Lukonin E., Poloskov A. A high-repetition rate pulsed electron accelerator (2013) IEEE Transactions on Dielectrics and Electrical Insulation, 20 (4), art. no. 6571453, pp. 1334-1339. DOI: 10.1109/TDEI.2013.6571453;
5. Poloskov A., Egorov I., Ezhov V., Remnev G. Multicapillary carbon-epoxy tubes as a cathode material for a pulsed electron accelerator (2016) Key Engineering Materials, 685, pp. 667-671. DOI: 10.4028/www.scientific.net/KEM.685.667;
6. Egorov I.S., Kaikanov M.I., Lukonin E.I., Remnev G.E., Stepanov A.V. The Astra repetitive-pulse electron accelerator (2013) Instruments and Experimental Techniques, 56 (5), pp. 568-570. DOI: 10.1134/S0020441213050035;
7. Egorov I.S., Kanaev G.G., Kukhta V.R., Lopatin V.V., Nashilevskiy A.V., Remnev G.E., Uemura K. Concrete surface scraping with high voltage pulsed power generator EG-350 (2012) Proceedings of the 2012 IEEE International Power Modulator and High Voltage Conference, IPMHVC 2012, art. no. 6518799, pp. 536-539. DOI: 10.1109/IPMHVC.2012.6518799;
8. Egorov I., Esipov V., Remnev G., Kaikanov M., Lukonin E., Poloskov A. A high-repetition rate pulsed electron accelerator (2012) Proceedings of the 2012 IEEE International Power Modulator and High Voltage Conference, IPMHVC 2012, art. no. 6518845, pp. 716-719. DOI: 10.1109/IPMHVC.2012.6518845.2

INTERNATIONAL CONFERENCES

1. 41st IEEE International Conference on Plasma Science and 20th International Conference on High-Power Particle Beams, Washington, May 25-29, 2014 (Poster presentation);
2. 3rd International Congress on Radiation Physics and Chemistry of Condensed Matter. High Current Electronics and Modification of Materials with Particle Beams and Plasma Flows, Tomsk, Russia, September 17-21, 2012 (Oral presentation);
3. 4th Euro-Asian Pulsed Power Conference and 19th International Conference on High-Power Particle Beams, Karlsruhe, Germany, 30 September-4 October 2012 (Poster presentation);
4. IEEE International Power Modulator and High Voltage Conference, San Diego, USA, June 3-7, 2012 (Poster presentation);
5. 8th International Conference on Nuclear and Radiation Physics, September 20-23, Almaty, Kazakhstan, 2011 (Oral presentation);
6. 18th International Conference on High Power Particle Beams EEPPC-BEAMS 2010, International conference Center (ICC) Jeju, South Korea, October 10-14, 2010 (Poster presentation);

LANGUAGE SKILLS

Native: Russian

Additional: English (B1) – Can understand the main points of clear standard input on familiar matters regularly encountered in work, leisure, etc. Can deal with most situations likely to arise whilst travelling in an area where the language is spoken. Can produce simple connected text on topics which are familiar or of personal interest. Can describe experiences and events, dreams, hopes & ambitions and briefly give reasons and explanations for opinions and plans.

INDIVIDUAL SKILLS AND HOBBIES

Preferred sport: power lifting and badminton.

Preferred arts: singing

PERSONAL PROFILE

Date of birth: 31th March, 1985
Citizenship: Russian Federation
Nationality: Russian