XXXII International Conference on Interaction of Intense Energy Fluxes with Matter

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Abstract. This paper is a preface to the proceedings of the XXXII International Conference on Interaction of Intense Energy Fluxes with Matter, which was held in Elbrus settlement, in the Kabardino-Balkar Republic of the Russian Federation, from March 1 to 6, 2017.

1. Introduction

The XXXII International Conference on Interaction of Intense Energy Fluxes with Matter (ELBRUS 2017) was held at the Educational-Scientific Base of the Kabardino-Balkarian State University in Elbrus settlement, in the Kabardino-Balkar Republic of the Russian Federation, from Wednesday, March 1, to Monday, March 6, 2017 (http://www.ihed.ras.ru/elbrus17).

This thirty-second meeting continued a regular series of conferences on physics at high energy densities, which began at the I National Session on Equations of State for Matter held in Cheget (in the vicinity of Mount Elbrus, Russia) in 1978.

2. Conference location

Elbrus settlement is 18 km from Mount Elbrus (the highest pike of the Caucasus at 5642 m), 120 km from Nalchik, which is the capital of the Kabardino-Balkar Republic, and 200 km from Mineralnye Vody, where the nearest international airport is located. Elbrus settlement is situated in the valley of the Baksan River (figure 1), which begins on Mount Elbrus. All settlements in the valley (Itkol, Cheget and Terskol) are famous ski resorts at altitude of approximately 2000 m. This valley is in a National Park, which is a region of extreme natural beauty. Visit to Mount Elbrus is possible by cable car for seeing the Greater Caucasus range with permanent snow from the Old Krugozor (3000 m), Mir (3500 m) and Gara-Bashi (3850 m) stations.

3. Founders

• Joint Institute for High Temperatures (JIHT) RAS, Moscow, Russia;
• Institute of Problems of Chemical Physics (IPCP) RAS, Chernogolovka, Russia;
• Kabardino-Balkarian State University (KBSU), Nalchik, Russia.
Figure 1. The valley of the Baksan River.

4. Sponsors
   • Russian Academy of Sciences (RAS);
   • Russian Foundation for Basic Research.

5. Organization
   5.1. Chairs
       • Vladimir E Fortov (JIHT RAS, Moscow, Russia);
       • Barasbi S Karamurzov (KBSU, Nalchik, Russia).

   5.2. Vice-chair
       • Vladimir P Efremov (JIHT RAS, Moscow, Russia).

   5.3. Secretaries
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         Technical Physics, Snezhinsk, Russia);
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• Alexander Alex Golubev (State Scientific Center of the Russian Federation “Institute for Theoretical and Experimental Physics”, National Research Center “Kurchatov Institute”);
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• Leonid V Zhigilei (University of Virginia, Charlottesville, VA, USA);
• Marvin A Zocher (Los Alamos National Laboratory, Los Alamos, NM, USA).

5.5. Website coordinator
• Maxim A Kadatskiy (JIHT RAS, Moscow, Russia).

5.6. Program committee
• Vladimir P Efremov (JIHT RAS, Moscow, Russia);
• Victor B Mintsev (IPCP RAS, Chernogolovka, Russia);
• Nikolay E Andreev (JIHT RAS, Moscow, Russia);
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• Konstantin V Khishchenko (JIHT RAS, Moscow, Russia);
• Galina Shpatakovskaya (Keldysh Institute of Applied Mathematics RAS, Moscow, Russia);
• Igor L Iosilevskiy (JIHT RAS, Moscow, Russia);
• Lev G D’yachkov (JIHT RAS, Moscow, Russia).

5.7. Organizers
• Elena S Khromova (Research Consulting Center “FORUM-SM”, Chernogolovka, Russia);
• Galina Yu Vorob’eva (Research Consulting Center “FORUM-SM”, Chernogolovka, Russia).
6. Topics
- Interaction of intense laser, x-ray and microwave radiation with matter;
- Interaction of powerful particle beams with matter;
- Techniques of intense energy fluxes generation;
- Diagnostics of ultrafast processes;
- Shock waves, detonation and combustion physics;
- Equations of state and constitutive equations for matter under extreme conditions at high pressures and temperatures;
- Low-temperature plasma physics;
- Issues of physics and power engineering, technology aspects.

7. Participants
472 people were pre-registered as participants of the conference. They submitted 409 abstracts with results of works of 954 co-authors from 146 institutions from 12 countries (Belarus, the Czech Republic, France, Germany, Israel, Italy, Japan, Kazakhstan, Poland, Russia, the United Kingdom and the United States of America).

226 participants attended the sessions from different cities of Germany, Israel, Russia and the United States of America (figure 2).

8. Scientific program
The conference program consisted of 7 plenary, 59 regular oral and 336 poster presentations.

8.1. Plenary
During the first four days of the conference sessions, plenary talks were given by seven invited speakers:

- Dieter H H Hoffmann (Technical University Darmstadt, Germany)—“Accelerators for high energy density physics”;
- Nikolay E Andreev (JIHT RAS, Moscow, Russia)—“Advanced methods of electron acceleration to high energies”;

Figure 2. Participants of the ELBRUS 2017 conference.
• Dmitry V Petrov (Russian Federal Nuclear Center—Zababakhin All-Russian Institute of Technical Physics, Snezhinsk, Russia)—“Diagnostics of high-speed processes”;
• Oleg F Petrov (JIHT RAS, Moscow, Russia)—“Active Brownian motion and structures of grains in strongly coupled dusty plasma”;
• Eduard E Son (JIHT RAS, Moscow, Russia)—“Universal energy distribution with power fluxes in spectra”;
• Efim A Khazanov (Institute of Applied Physics RAS, Nizhny Novgorod, Russia)—“Laser interferometer gravitational wave observatory: Machine review and contribution of the IAP RAS”;
• Igor L Iosilevskiy (JIHT RAS, Moscow, Russia)—“Anomalous charge profiles in thermo-electrostatics and phase transitions in Coulomb models”.

8.2. Oral sessions
There were 59 regular talks presented during 4 consecutive sessions:

• Power interaction with matter;
• Shock waves, detonation and combustion;
• Equations of state for matter;
• Physics of low temperature plasma.

8.3. Poster session
All posters were presented during two poster sessions on March 2 and 3, 2017.

9. Best young work prize
Among young participants, traditionally, a competition for the best work prize was carried out. Prizes went to

• Maria A Alkhimova (JIHT RAS, Moscow, Russia)—“Ultra-bright x-ray source generation from thin Al and Fe solid foils irradiated with 200 TW fs laser pulses”;
• Maria S Egorova (Dukhov Research Institute of Automatics, Moscow, Russia)—“Modeling of shock-induced ejecta from layer of spherical particles”;
• Elena A Galitskaya (Institute of Solid State Physics RAS, Chernogolovka, Russia)—“Preparation and investigations of nanocluster compounds with hydrogen bonds”;
• Maxim A Maltsev (JIHT RAS, Moscow, Russia)—“Thermodynamic properties of the argon dimers Ar^+_2 and Ar_2”.

10. Prospects
The next meeting of the series will be the XXXIII International Conference on Equation of State for Matter, which is planned in the vicinity of Mount Elbrus from March 1 to 6, 2018. That is announced via the website http://www.ihed.ras.ru/elbrus18.

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