XXXIV 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 XXXIV International Conference on Interaction of Intense Energy Fluxes with Matter, which was held at the Cheget pension in the village of Terskol, in the settlement of Elbrus, in the Kabardino-Balkar Republic of the Russian Federation, from March 1 to 6, 2019.

1. Introduction
The XXXIV International Conference on Interaction of Intense Energy Fluxes with Matter (ELBRUS 2019) was held at the Cheget pension, which is situated on Polyana Cheget in the village of Terskol, in the settlement of Elbrus, in the Kabardino-Balkar Republic of the Russian Federation, from Friday, March 1, to Wednesday, March 6, 2019 [1].

2. Conference location
The Cheget pension in Terskol is 5 km from Mount Elbrus (the highest peak of the Caucasus at 5642 m), about 120 km from Nalchik, which is the capital of the Kabardino-Balkar Republic, where the nearest international airport is located, and about 180 km from Mineralnye Vody, where there is another international airport.

The village of Terskol is situated in the valley of the Baksan River, which begins on Mount Elbrus (figure 1). It is a famous ski resort at altitude of about 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 (3780 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.
4. **Sponsor**  
- Russian Academy of Sciences (RAS).

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

5.2. **Vice-Chairmen**  
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- Valery G Sultanov (IPCP RAS, Chernogolovka, Russia).

5.3. **Secretary**  
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• Alexey P Savintsev (KBSU, Nalchik, Russia);
• Boris Yu Sharkov (Joint Institute for Nuclear Research, Dubna, Russia);
• Eduard E Son (JIHT RAS, Moscow, Russia);
• Vladimir V Stegailov (JIHT RAS, Moscow, Russia);
• Lev M Zeleny (IKI, Moscow, Russia);
• 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
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• Valery G Sultanov (IPCP RAS, Chernogolovka, 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;
• Methods of mathematical modeling in physics of extreme states of matter;
• High-energy astrophysics;
• Low-temperature plasma physics;
• Issues of physics and power engineering, technology aspects.

7. Participants

391 people were pre-registered as participants of the conference. They submitted 329 abstracts [2] with results of works of 777 co-authors from 142 institutions from 16 countries (Argentina, Belarus, the Czech Republic, Finland, France, Germany, Iran, Japan, Kazakhstan, the People’s Republic of China, the Republic of Korea, Russia, Serbia, the Netherlands, the United Kingdom, the United States of America).

232 participants attended the sessions from different cities of Argentina, Finland, Germany, Japan, the Republic of Korea and Russia (figure 2).

8. Scientific program

The conference program consisted of 5 plenary, 71 regular oral and 253 poster presentations.

8.1. Plenary

During the first two days of the conference sessions, the plenary talks were given by five invited speakers:

• Vladimir Evgenyevich Fortov (JIHT RAS, Moscow, Russia) “Thermodynamics of shock-wave and isentropic action on matter”;
• Alexander Anatolyevich Lutovinov (IKI, Moscow, Russia) “Neutron stars from the collapse to the merging”;
• Dmitry Petrov (RFNC-VNIITF, Snezhinsk, Russia) “Polymetodical measurements of high-speed processes”;
• Eduard E Son (JIHT RAS, Moscow, Russia) “Numerical and experimental investigation of integral characteristics of cruise hydrogen scramjet demonstrator”;
• Juri Poutanen (University of Turku, Finland) “Constraining equation of state of neutron stars using astrophysical measurements”.

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8.2. Oral sessions
There were 62 regular talks presented during 5 consecutive sessions:

- Power Interaction with Matter;
- Shock Waves, Detonation and Combustion;
- Equations of State for Matter;
- Methods of Mathematical Modeling;
- Physics of Low Temperature Plasma.

8.3. Poster session
All posters were presented during two poster sessions on March 2 and 3, 2019.

9. Best poster awards
A contest for the best poster was held among the participants. Prizes went to five:

- Natalya A Grachyova (CSU, Chelyabinsk, Russia) “Comparison of Zerilli–Armstrong model and Maxwell relaxation model with variable relaxation time for description of elastic precursor of shock waves in aluminum”;  
- Elena O Baronova (National Research Center “Kurchatov Institute”, Moscow, Russia) “The origin of plasma jets generated in Z-pinch discharges”;
- Elena Tuch (Institute of Strength Physics and Material Science of the Siberian Branch RAS, Tomsk, Russia) “Elastoplastic deformation processes in materials with cubic symmetry of properties”;

Figure 2. Participants of the ELBRUS 2019 conference.
• Natalia L Klinacheva (South Ural State University, Chelyabinsk, Russia) “Analysis of the interaction of the spherical shock wave with the forest”;
• Kristina Krysanova (JIHT RAS, Moscow, Russia) “Treatment of granulated organic manure based on bird droppings by hydrothermal carbonization and torrefaction methods”.

10. Prospects
The next meeting in the series is the XXXV International Conference on Equations of State for Matter, 1–6 March 2020, Elbrus, Kabardino-Balkaria, Russia [3].

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