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Section 3. Power Interaction with Matter

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2. Inogamov N.A. (ITP RAS, Chernogolovka, Russia), Perov E.A., Zhakhovsky V.V., Shepelev V.V., Petrov Yu.V., Fortova S.V., *Laser Shocks: from Elastic-Plastic to Elastic Propagation Mode* Abstract (23 Kb)
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4. Lutoshina D.S. (ITMOU, Saint-Petersburg, Russia), Morozova A.A., Sergeev M.M., Odintsova G.V., *Laser synthesis of plasmonic gold nanoparticles* Abstract (20 Kb)
5. Abramov P.A. (NIIC SB RAS, Novosibirsk, Russia), *Microwave assisted synthesis of silver nanoparticles, new polyoxometalates and their composites* Abstract (17 Kb)
6. Kudryashov S.I. (LPI RAS, Moscow, Russia), Danilov P.A., Stsepuro N.G., Smirnov N.A., Krasin G.K., Chen J., Kovalev M.S., Gulina Yu.S., Kuz'min E.V., Ostrikov S.A., *Experimentally acquired basic relaxation stages in ultrashort-pulse laser excited diamond* Abstract (21 Kb)
7. Kuzmin E.V. (LPI RAS, Moscow, Russia), Danilov P.A., Stsepuro N.G., Smirnov N.A., Krasin G.K., Kudryashov S.I., Gulina Y.S., Kovalev M.S., *Critical self-focusing power in natural and synthetic diamonds* Abstract (29 Kb)
8. Gulina Y.S. (LPI RAS, Moscow, Russia), Kudryashov S.I., Smirnov N.A., Pakholchuk P.P., Ostrikov S.A., *Estimation of nonlinear intracenter absorption coefficients of 1030nm ultrashort laser pulses in natural diamond* Abstract (20 Kb)
9. Danilov P.A. (LPI RAS, Moscow, Russia), Kudryashov S.I., Levchenko A.O., Oleynichuk E.A., Smirnov N.A., *The nature of laser-induced photoluminescent micro-marks in the volume of natural diamond* Abstract (20 Kb)
10. Kovalev M.S. (LPI RAS, Moscow, Russia), Krasin G.K., Gritsenko I.V., Kudryashov S.I., *Nonlinear photoexcitation of photoluminescence in the bulk of natural and synthetic diamonds* Abstract (24 Kb)
11. Krasin G.K. (LPI RAS, Moscow, Russia), Kovalev M.S., Podlesnykh I.M., Stsepuro N.G., Kudryashov S.I., *Polarization effects on ultrafast laser ablation of diamonds* Abstract (26 Kb)
12. Savintsev A.P. (KBSU, Nalchik, Russia), *Optical Breakdown Oriented Surface (111) Sodium Chloride* Abstract (26 Kb)
13. Gavasheli Yu.O. (KBSU, Nalchik, Russia), Savintsev A.P., *The role multi-photon processes at the breakdown of sodium chloride by femtosecond laser pulses* Abstract (27 Kb)
14. Shevchenko M.A., Zemskov K.I., Karpov M.A. (LPI RAS, Moscow, Russia), Kudryavtseva A.D., Maresev A.N., Tcherniega N.V., Umanskaya S.F., *Raman random lasing – extremely high conversion efficiency and temperature dependence* Abstract (20 Kb)
15. Bisti V.E. (ISSP RAS, Chernogolovka, Russia), Lebedev M.V., Parakhonsky A.L., *Giant optical fluctuations in GaAs quantum wells with different widths* Abstract (24 Kb)
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21. Veiko V.P., Odintsova G.V., Karlagina Yu.Yu., Radaev M.M. (ITMOU, Saint-Petersburg, Russia), Zernitskaya E.A., Rogachev K.O., Mikhailova K.A., Lovushkina E.M., *Method of designing individual medical devices and its laser processing to impart antibacterial properties* Abstract (23 Kb)
22. Veiko V.P., Karlagina Yu.Yu. (ITMOU, Saint-Petersburg, Russia), Radaev M.M., Volova L.T., Boltovskaya V.V., Odintsova G.V., *Laser forming of oxide nanoporous coatings on glass for investigation of the protein adhesion* Abstract (22 Kb)
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Universal bench for testing streng of the composite thin-walled constructions to radiation and impact

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Providing modern technical requirements for missile and space technics is impossible without providing the protection of their constructions from the complex action of radiation [1] and the impact of compact solids. Mechanical radiation action and low-speed impact cause non-stationary deformations of constructions and their subsequent destruction. In the case when the construction is protected by a multi-layer porous package, the wave stage of deformation is generally not dangerous and destruction occurs at the shell stage. Then, the features of the mechanical action of radiation and the impact of bodies are leveled, and as a result, everything is reduced to the effect of one-sided non-stationary pressure.on the surface of the protected construction. Thermal action of radiation leads to heating of the construction and reduction of its thickness.

The work proposes new explosive devices and a universal bench, which allows you to model low-pulse mechanical action together with the thermal RPF action and low-speed impact. Thermal action is reproduced by contact conductive plates, high-power EHF emitters and pyrotechnic sheet charges. The pneumatic gun is used to accelerate the striker.

The design of the universal bench takes into account previous developments [2], but a principal change has been made.

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[1] Bakulin V and Ostrik A 2015 *Complex action of radiations and particles on the thin-walled constructions having heterogeneous coverings* (Moscow: Fizmatlit)

[2] Ostrik A, Romadinova E, Cheprunov A and et al 2008 *Mechanical X-ray action on thin-walled composite constructions* (Moscow: FIZMATLIT)