

TENTATIVE TECHNICAL PROGRAM

MONDAY, JULY 4, 2016

9:30-10:00

Registration

10:00

Opening Ceremony

S. M. Frolov, S. A. Gubin, G. D. Roy

Session 1

**TRANSIENT COMBUSTION PHENOMENA
IN VARIOUS MEDIA**

Co-Chairs: S. M. Frolov, G. D. Roy

10:30

Keynote Lecture

Research of kick-motor rocket system of rotating detonation engines

J. Kasahara

11:30–12:00

Coffee break

12:00

The effect of turbulence on flow development in high-speed combustor

***A. E. Zangiev, S. M. Frolov, F. S. Frolov, V. S. Ivanov,
S. N. Medvedev, I. V. Semenov, V. V. Vlasenko***

12:30

Impacts of flame folding and hydraulic resistance on the deflagration-to-detonation transition

L. Kagan, G. Sivashinsky

13:00

Mechanism of quasi-detonation onset and propagation inside obstructed channels

I. Yakovenko, A. Kiverin, M. Ivanov

13:30

A numerical study on various aspects of rotating detonation combustion in annular chambers

S. Escobar, I. Celik

14:00-15:00

Lunch

Session 2

**TRANSIENT COMBUSTION PHENOMENA
IN VARIOUS MEDIA**

Co-Chairs: S. A. Gubin, A. R. Kasimov (TBC¹)

15:00

Keynote Lecture

Numerical modelling of the detonation processes in inhomogeneous conditions

I. Semenov, R. Solomatin, N. Puchkin

16:00

On the self-ignition of the gas flow in a vortex chamber

D. V. Voronin

16:30–17:00

Coffee break

17:00

Design for an air flow in a test rig before the combustion chamber

J. Zinian

¹ To Be Confirmed

17:30

Cartesian grid approach for the modeling of shock waves propagation in the shaped form domains.

D. A. Sidorenko, P. S. Utkin

18:00

Transition boundaries between regular and Mach reflection in interference of the counter-propagating shock waves

V. Upyrev

19:00–21:00

WELCOME PARTY

TUESDAY, JULY 5, 2016

Session 3

GASEOUS, HETEROGENEOUS, AND CONDENSED-PHASE DETONATIONS

Co-Chairs: *I. Celik, K. A. Avdeev* (TBC)

9:30

Keynote Lecture

Performance of rotating detonation engines operated on gaseous hydrocarbons at elevated inlet enthalpies (TBC)

M. L. Fotia, T. A. Kaemming, A. G. Naples, J. Hoke, F. Schauer

10:30–11:00

Coffee break

11:00

On a theory of pulsating and cellular detonations

A. R. Kasimov, L. Faria, R. Rosales

11:30

Direct numerical computation of detonation linear stability:
An example of the Fickett's detonation analog

A. R. Kasimov, D. I. Kabanov

12:00

Mathematical modeling of strongly unstable detonation wave propagation: Laboratory vs. shock-attached frame

A. I. Lopato, P. S. Utkin

12:30

Well-posed Euler model of shock and detonation induced two-phase flow in bubbly liquid

R. R. Tikhvatullina, S. M. Frolov

13:00

Lunch

Session 4

**GASEOUS, HETEROGENEOUS,
AND CONDENSED-PHASE DETONATIONS**

Co-Chairs: S. Hansmetzger, S. A. Zhdan (TBC)

14:00

Keynote Lecture

Operation and performance of rotating detonation rocket engine fueled by natural gas and liquid propane: Experimental studies

V. S. Ivanov

15:00

Numerical study of multifront structure of a classical and continuous rotating detonation waves in methane mixtures

A. V. Trotsyuk

15:30–16:00

Coffee break

16:00

On the dynamics of one-dimensional gaseous detonations with losses

A. Sow, A. R. Kasimov

16:30

Dusty detonation: Dissipation increase and cellular structure

O. V. Sharypov

17:00

Deflagration-to-detonation transition in liquid film – gaseous oxygen system

S. M. Frolov, V. S. Aksenov, I. O. Shamshin

17:30

Modelling of the detonation of condensed high explosives

Yu. A. Bogdanova, S. A. Gubin, A. A. Anikeev, S. B. Victorov

18:00

Experimental studies of multicomponent castable explosives detonation characteristics

V. N. Kulikov, A. A. Matveev, A. N. Osavchuk, N. I. Shishov

WEDNESDAY, JULY 6, 2016

EXCURSIONS

THURSDAY, JULY 7, 2016

Session 5

**APPLICATIONS OF FAST COMBUSTION MODES
AND DETONATIONS IN INDUSTRY AND PROPULSION**

Co-Chairs: *A. Kiverin, O. V. Sharypov* (TBC)

9:30

Keynote Lecture

Experimental and computational studies of shock wave-to-bubbly water momentum transfer

K. A. Avdeev

10:30–11:00

Coffee break

11:00

Pulse-cyclic combustion of gases in a liquid for new energy systems

V. S. Teslenko, A. P. Drozhzhin, R. N. Medvedev

11:30

Continuous detonation of a syngas–air mixture in a large detonation chamber DC-500

F. A. Bykovskii, S. A. Zhdan

12:00

Control of detonation combustion of a gas mixture in a plane channel

V. A. Levin, T. A. Zhuravskaya

12:30

Phase and chemical transformations in condensed substances in shock and detonation waves

S. A. Gubin, I. V. Maklashova, A. L. Mihailov

13:00

Lunch

Session 6

APPLICATIONS OF FAST COMBUSTION MODES AND DETONATIONS IN INDUSTRY AND PROPULSION

Co-Chairs: *F. A. Bykovskii, V. V. Markov* (TBC)

14:00

Keynote Lecture

Modelling of the jet engine annular nozzle pulsing mode operation

***V. A. Levin, N. E. Afonina, V. G. Gromov, I. S. Manuylovich,
A. N. Khmelevsky, V. V. Markov***

15:00

Effect of fuel injection area ratio on the performance of hollow rotating detonation engine

S. Yao, J. P. Wang

15:30–16:00

Coffee break

16:00

Detonation propagation in an annular chamber

S. Hansmetzger, R. Zitoun, P. Vidal

16:30

Numerical study of natural gas – oxygen rotating detonation rocket engine operation and performance

S. N. Medvedev, S. M. Frolov, V. S. Ivanov

17:00

Operation of air-breathing hydrogen-fueled rotating detonation engine in supersonic flight conditions: Numerical simulation

A. V. Dubrovskii, S. M. Frolov, V. S. Ivanov, A. E. Zangiev

17:30

Consistent atomistic and hydrodynamics simulations of detonation in condensed-phase model explosive

S. A. Murzov, O. V. Sergeev, S. A. Dyachkov, M. S. Egorova, A. N. Parshikov, V. V. Zhakhovsky

18:00

Thermal analysis of structural changes of detonation nanodiamonds

S. Gubin, V. Efremov, I. Maklashova, E. Zakatilova

19:00

CONFERENCE DINNER

FRIDAY, JULY 8, 2016

Session 7

APPLICATIONS OF FAST COMBUSTION MODES AND DETONATIONS IN INDUSTRY AND PROPULSION

Co-Chairs: *V. A. Smetanyuk, A. V. Trotsyuk (TBC)*

9:30

Keynote Lecture

Pressure profile for transverse waves of continuous spin detonation in a heterogeneous fuel–air mixture

F. A. Bykovskii, S. A. Zhdan, E. F. Vedernikov, A. N. Samsonov, A. E. Tarnajkin, A. I. Sychow (TBC)

10:30–11:00

Coffee break

11:00

Keynote Lecture

Endurance tests of a large-scale natural-gas fueled pulse-detonation burner

V. A. Smetanyuk

12:00

Approximate mathematical model of nonequilibrium burning in solid fuel gas generator

I. S. Averkov, A. V. Baikov, S. I. Marthinenko, E. V. Surikov, V. A. Strunin, P. D. Toktaliev

12:30

Interior ballistic simulation of pyrotechnic catapult based on propellant deflagration model

Q. Liu, C. Zhou, X. Liu

13:00

Results of the study of structure oxider phase emulsion explosives

S. A. Gorinov, I. Y. Maslov, E. P. Sobina

13:30

Panel Discussion

Topic - TBA

14:30–16:00

FAREWELL LUNCH