



## INTERNATIONAL CONFERENCE ON HIGH-SPEED VEHICLE SCIENCE & TECHNOLOGY

26 • 29  
November  
**2018**  
Moscow  
Russia



1918–2018  
**TsAGI**  
**100**

We kindly invite you to the “International Conference on High-Speed Vehicle Science and Technology” (**HiSST**).

The **HiSST** promotes open discussion between research institutions, academia and industry from around the globe on research and development of enabling technologies for supersonic to high-speed vehicles.

In honour of TsAGI’s 100<sup>th</sup> Anniversary, the inaugural location of this international conference is chosen to be Moscow (Russia).

**HiSST** 2018 is supported by CEAS and hosted by TsAGI in Moscow, Russia on 26–29 of November.

### ★ Key Dates

<i>January 30</i>	Call for abstracts
<i>March 31</i>	Abstract deadline
<i>June 30</i>	Notification of acceptance of abstracts
<i>July 1 – October 1</i>	Early bird registration
<i>October 31</i>	Manuscript deadline

### Conference Venue

Hotel Metropol Moscow, a 5-star venue with unique architecture and rich history, comfortable accommodation for participants. The main sightseeing attractions are within walking distance. Nearby points of interest: Bolshoi Theatre, Red Square, St. Basils Cathedral, Kremlin, Gostiny Dvor, etc.

### Preliminary Programme and Social events

- ❖ **November 25, Sunday**  
Conference Registration, Drinks Reception
- ❖ **November 26, Monday**  
Conference Registration, Global Reports or Plenary Sessions, Working Sessions, Drinks Reception
- ❖ **November 27, Tuesday**  
Global Reports or Plenary Sessions, Working Sessions
- ❖ **November 28, Wednesday**  
Global Reports or Plenary Sessions, Working Sessions, Culture Program, HiSST Gala Dinner
- ❖ **November 29, Thursday**  
Working Sessions, Technical Tours including visit to unique high-speed facilities at TsAGI, CIAM, MAI, Moscow State University
- ❖ **November 30, Friday**  
General Aeronautical Conference, TsAGI’s 100<sup>th</sup> Anniversary Gala Dinner

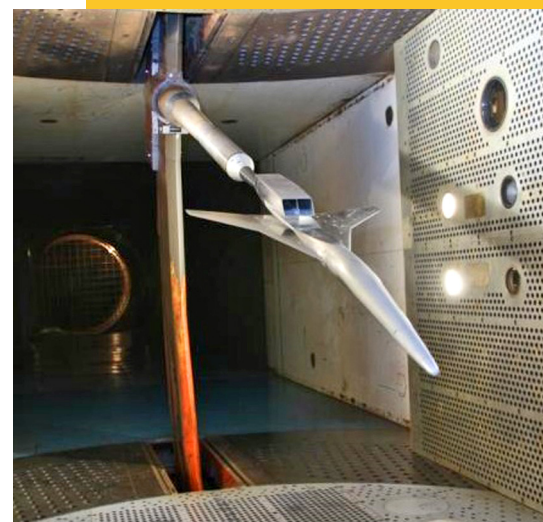
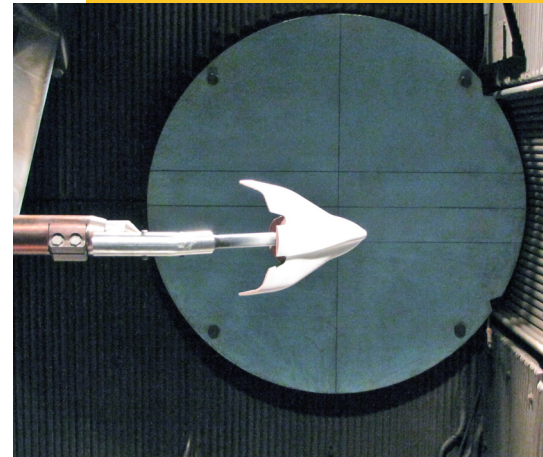
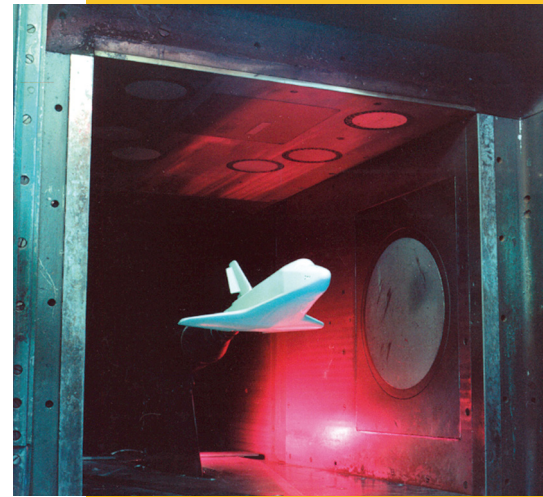
### ★ Additional information:

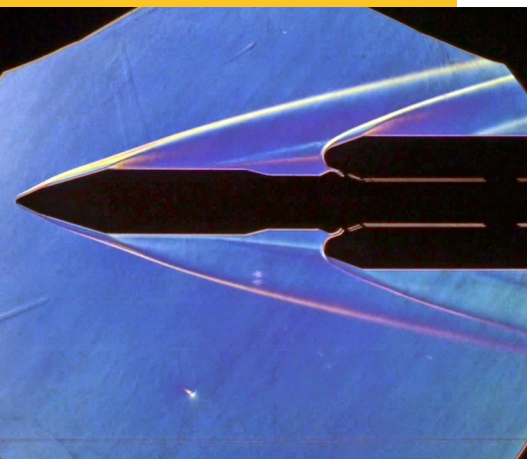
**November 30, 2018**

Participants of the International Conference on High-Speed Vehicle Science and Technology are invited, free of charge, to this General Aeronautical Conference organized by TsAGI and closed off with TsAGI’s 100<sup>th</sup> Anniversary Gala Dinner.

## Technical Topics

- **High-Speed Missions and Vehicles** *including:*
  - ✓ Planned and ongoing national and international high-speed vehicle programs and missions
  - ✓ Advanced launch vehicle concepts and hypersonic atmospheric flight vehicle concepts including commercial space tourism, intercontinental transport and (re)-entry
  - ✓ Design, development and manufacturing of related technologies and components, both for reusable and expendable applications
  - ✓ Overall system performance & optimization
  - ✓ Design methodologies and engineering models
- **Propulsion Systems and Components** *including rocket, ramjet, dual mode ramjet, scramjet, rocket and turbine combined cycles, detonation engines, electric propulsion and other advanced propulsion systems addressing:*
  - ✓ Advanced cycles & concepts including plasma assisted combustion techniques covering full Mach range with application to hypersonic regimes
  - ✓ System & component performance, development & manufacturing: inlets, isolators, combustors, injectors, ignition, flameholding, nozzles...
  - ✓ Combustion and mixing processes incl. ignition, flame-out, instabilities...
  - ✓ Airframe interaction and integration
  - ✓ Conventional, cryogenic & alternative fuels, additives, catalysis
  - ✓ Propulsion and fuel (sub)systems: feed-lines, pumps, tanks....
  - ✓ Advanced computational techniques, CFD & engineering models
- **Thermal, Energy and Management Systems** *for vehicle, subsystems, and payload, including sources, conversion and distribution systems addressing:*
  - ✓ Thermal protection, heat exchangers, cooling, coating & ablative systems
  - ✓ Active and Passive systems
  - ✓ System & component performance, development & manufacturing
  - ✓ On-board power generation and environmental control
  - ✓ Design methodologies, engineering models and advanced computational techniques
- **Guidance & Control Systems** *including flight mechanics, guidance, navigation, routing, trajectory optimization, operations research, sensors, actuators, controllers and algorithms, and health monitoring addressing:*
  - ✓ Flight control and trajectory optimization techniques
  - ✓ Health monitoring and management, fault detection isolation and recovery, health and usage monitoring systems
  - ✓ System & component performance, development & manufacturing
  - ✓ Advanced computational techniques, CFD & engineering models
- **Materials and Structures** *for vehicle and all subsystems covering:*
  - ✓ Metallic & non-metallic materials for hot and cooled structures and thermal protection systems
  - ✓ Active/functional materials
  - ✓ Hot, cold and integrated structural architectures incl. conformal layouts





- ✓ Quality control, damage tolerance, structural health monitoring and survivability
  - ✓ Materials manufacturing and processing
  - ✓ Advanced modelling & computational techniques
  - **High-Speed Aerodynamics and Aerothermodynamics** *with application to hypersonic regimes covering full Mach range from take-off, cruise and (re)-entry including:*
    - ✓ Numerical and experimental studies including aero-thermodynamics, stability-transition-turbulence, MHD, gas physics and chemistry, radiation physics, destructive re-entry
    - ✓ Numerical and experimental thermal studies incl. passive and active heat transfer, regenerative, transpiration, ablation, pyrolysis, endothermic decomposition...
    - ✓ Advanced modelling & computational techniques: development and validation
    - ✓ Multi-disciplinary techniques and models: fluid-structure interaction, conjugate heat transfer, CFD/flexible and rigid body dynamics...
  - **Testing & Evaluation** *covering:*
    - ✓ Ground and in-flight test facilities, flight test operations and simulations
    - ✓ Diagnostics and data systems
    - ✓ Scale limitations and facility effects
    - ✓ Validation and verification
    - ✓ Facility modelling & simulation
  - **Operation and Environment** *including:*
    - ✓ Economic and market analysis incl. cost modelling
    - ✓ Regulatory, certification, operation, maintenance, health & safety issues: on-ground and in-flight
    - ✓ Environmental effects including sonic boom, noise and emissions
    - ✓ Infrastructure and traffic management
  - **Hypersonic Fundamentals and History** *including:*
    - ✓ Theoretical and analytical studies including aero-thermodynamics, stability-transition-turbulence, SWBLI, MHD, gas physics and chemistry, radiation physics, fluid-structure interaction and destructive re-entry
    - ✓ Theoretical and analytical thermal studies incl. passive and active heat transfer, regenerative, transpiration, ablation, endothermic decomposition...
    - ✓ Basic materials science for high temperature and aggressive environment, life-time predictions...
    - ✓ Historical aspects, analyses and assessments and lessons learned
    - ✓ Educational initiatives and workforce development activities
- ★ Selected papers at the conference shall be promoted for publication in the CEAS Aeronautical and/or Space Journal

## International Technical Committee

- Australia Prof. Dr. Vincent Wheatley (Univ. of Queensland)
- Brazil Prof. Dr. Marco Sala Minucci (IEAv)
- China Dr. Lihong Chen (Chinese Academy of Sciences)
- Europe Prof. Dr. Johan Steelant (European Space Agency)
- France Dr. Francois Falempin (MBDA)
- Germany Prof. Dr. Klaus Hanneman (DLR)
- Italy Dr. Gennaro Russo (Trans-Tech)
- Japan Prof. Dr. Masataka Maita (JAXA)
- Russia Prof. Dr. Sergey Chernyshev (TsAGI)
- South-Korea Prof. Dr. Yung-Hwan Byun (Konkuk University)
- United Kingdom Prof. Dr. Matthew McGilvray (Univ. of Oxford)
- United States Dr. Adam Siebenhaar (Mach 7H)

## Social Events for Accompanying Persons

Drinks Reception **November 25 & 26**

TsAGI's 100<sup>th</sup> Anniversary Gala Dinner **November 30**

- **Moscow sightseeing tour**
- **Tour on the Kremlin and Red Square**
- **Tour of the historical building of the Bolshoi Theater**
- **Ostankino TV tower tour** (including observation deck at a high 337 m)
- **State Tretyakov Art Gallery** (the main museum of Russian national art).
- **Tour on the Sergiev Posad** — the city of Golden Ring of Russia (incl. the Trinity-Sergius Lavra — the object of the world heritage list of UNESCO, museum of Russian toys, etc.)

Detailed information about the meeting, visa support, travel, etc. will be available on [www.tsagi.com](http://www.tsagi.com) in the near future. Additional information will also be provided with the acceptance of abstracts notification. For any questions, feel free to contact:

*Evgenia Gutorova* (meeting coordinator)

by e-mail [evgenia.gutorova@tsagi.ru](mailto:evgenia.gutorova@tsagi.ru)

## Registration Fees

Participant	Cost
Early Bird	€ 885
Standard — on-line	€ 1 040
Standard — on site	€ 1 135
Student	€ 225
Retired Members	€ 370

Networking Lunch and two Coffee breaks every working days

★ For more information:

<http://hisst.tsagi.com>

<https://ceas.org/newevents/>

