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 100th 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

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>January 30</td>
<td>Call for abstracts</td>
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<tr>
<td>March 31</td>
<td>Abstract deadline</td>
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<tr>
<td>April 8</td>
<td>Notification of acceptance of abstracts</td>
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<tr>
<td>July 1 – October 1</td>
<td>Early bird registration</td>
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<tr>
<td>October 31</td>
<td>Manuscript deadline</td>
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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. Basil’s 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 100th 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 100th 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 100th 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 [http://hisst.tsagi.com](http://hisst.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 [hisst@tsagi.ru](mailto:hisst@tsagi.ru)

Registration Fees

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<tr>
<th>Participant</th>
<th>Cost</th>
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<tbody>
<tr>
<td>Early Bird</td>
<td>€ 885</td>
</tr>
<tr>
<td>Standard — on-line</td>
<td>€ 1040</td>
</tr>
<tr>
<td>Standard — on site</td>
<td>€ 1135</td>
</tr>
<tr>
<td>Student</td>
<td>€ 225</td>
</tr>
<tr>
<td>Retired Members</td>
<td>€ 370</td>
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Networking Lunch and two Coffee breaks every working days

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*For more information:
[http://hisst.tsagi.com](http://hisst.tsagi.com)
[https://ceas.org/newevents/](https://ceas.org/newevents/)