

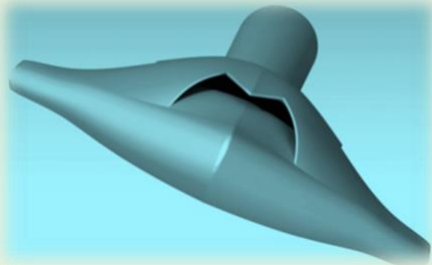
Symposium for Promotion of Indigenous CFD for Engineering Sciences

SPICES-2022

Internal-External Intake flow Validation

March 7, 2022

National Wind Tunnel Facility
Indian Institute of Technology Kanpur



Organized by:



Sponsored by:



Scope of the Symposium

The purpose of the symposium is to promote mature indigenous CFD efforts resulting in the development of general-purpose solvers, which can be used by different aerospace industries, both within the country and abroad. The symposium is towards an independent evaluation of the CFD codes for features such as accuracy, efficiency, scalability and robustness. The symposium also promotes generating high quality experimental data for CFD validation. The first of the symposium was held during 2009 and NASA trap wing was considered for code evaluation. The second symposium was held during 2013 and a flying wing configuration was considered. The highlight of the second symposium was that high quality experimental data for a range of Reynolds numbers were generated on different tunnels for the symposium.

While the first two symposia dealt with external flow configurations, the upcoming SPICE-2022 is towards CFD validation for internal flows with mild separation. A reasonably complex internal flow configuration of a serpentine intake duct with a forebody and cowl lip will be considered for this event. The CAD model of the geometry along with unstructured grid is made available to all participants of SPICES-2022.

Felicitations of Prof. S. M. Deshpande

Prof. S. M. Deshpande is a living legend in CFD research. Born on March 7, 1942, at a small village in Madhya Pradesh, he received his Ph.D. from IISc, Bengaluru while working with Prof. Roddam Narasimha. There he proposed new techniques for solving Boltzmann equations which later became popular in the CFD community as KFVS schemes. He served as a faculty of Aerospace Engineering in IISc Bengaluru between 1969-2004 and also headed the CFD center for 20 years. Subsequently, he joined JNCASR and continued to contribute to several programs of national interest. In his career, he has supervised more than 100 Ph.D. and masters' students and also made seminal efforts in popularizing CFD in India. For his outstanding contributions, Prof. Deshpande has received several awards including the DRDO Academic Excellence Award, Astronautical Society of India Award, Biren Roy Trust Award by AeSI, and IISc Alumni Award. On his 80th birthday, SPICES-2022 will felicitate Prof. S. M. Deshpande through a special event.

Important Dates

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First Announcement*	20 th Nov 2019
Last date for data submission	Feb. 25, 2022
SPICES 2022	March 7, 2022

*SPICES was scheduled in 2020 but got postponed due to COVID-19

About the Organizers:

ADA

Aeronautical Development Agency (ADA), Bengaluru, an autonomous body under Ministry of Defence, was established as the nodal agency for the design and development of the Indian Light Combat Aircraft (LCA) Tejas. ADA led the development of derivatives of LCA, such as LCA Trainer and LCA Naval variants having both fighter and trainer versions. ADA also, successfully, completed conceptual and preliminary design of Indian Unmanned Strike Air Vehicle (IUSAV), also known as Ghatak. ADA is presently leading the development of Advanced Medium Combat Aircraft (AMCA), LCA Mk2 and Twin-Engine Deck-Based Fighter (TEDBF) for the Indian armed forces. Apart from the ongoing combat aircraft design activities, ADA has also been concentrating on research and development efforts towards realizing combat air vehicles of the future.

IIT Kanpur

The Indian Institute of Technology Kanpur (IIT Kanpur) was established in the year 1960. The Parliament of India passed the 'Institutes of Technology Act 1961' declaring all the IITs as "Institutions of National Importance". Indian Institute of Technology Kanpur is engaged in carrying out original research of significance and technology development at the cutting edge. It imparts training to students so that they become competent and motivated engineers and scientists. The Institute celebrates freedom of thought, cultivates vision and encourages growth, but also inculcates human values and concern for the environment and the society. The Institute has about 6000 undergraduate and postgraduate students, 500 faculty, and more than 1500 supporting staff.

About the Sponsor:

The Trust for Advancement of Aerodynamics in India (TAAI) was formed in 2008 to promote R&D activities in computational, experimental and theoretical fluid dynamics, multi disciplinary optimisation, design of aerospace vehicles & related subjects. TAAI also works to bring together scientists and engineers working in the these areas.

FAQs

- Who can participate?

Anyone who has interest in industrial aerospace CFD can participate in the event. As the objective is to validate the CFD process, both developers and users of CFD are welcome to participate in the event. The event on March 7 is open to all interested.

- Who will generate the grid?

Though the organizers will provide the required unstructured grids, the participants are free to generate their own structured or unstructured grids.

- Who will provide the computing platform?

The participants are expected to use their own in-house computing capability to generate the required solutions.

SPICES-2022 *Executive Committees*

Patrons

Secretary, Department of Defence R&D, Director General, DRDO
Director, IIT Kanpur

Advisory Committee

Head NWTF, IIT Kanpur
Head AE, IIT Kanpur
Head ME, IIT Kanpur
Dr. T.G. Pai, Former PD (TD), ADA
Dr. A. R. Upadhyaya, Former Director, NAL
Coordinator, Aerodynamics Panel, AR&DB
Coordinator, Propulsion Panel, AR&DB
Dr. A. K. Ghosh, Outstanding Scientist and PD (AMCA), ADA
Mr. Biju Uthup, Consultant NIAS & Former PD (Ghatak), ADA
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Mr. Satya Prakash, ADA
Prof. A. C. Mandal, IIT Kanpur
Mrs. Valliammai Somasundaram, ADA
Mr. Sharad Saxena, NWTF, IIT Kanpur

Organizing Committee

Prof. Rajesh Ranjan, IITK (Secretary)
Prof. Abhijit Kushari, IITK
Mr. Muralidhar M., ADA

Event Contacts:

Prof. Rajesh Ranjan: spices20@iitk.ac.in

Note: This event will be conducted in fully online mode. Secured links for participation will be sent to individual registrants closer to the conference date. There is no fee for attending the symposium but prior registration is necessary (<https://www.iitk.ac.in/spices/>) .



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SPICES-2022

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March 7, 2022 (Monday)

Organizers: IIT Kanpur & ADA



Program Schedule

9:00 AM: Inaugural Ceremony

Session-I (9:15 AM – 10:15 AM)

Chairman: Dr. S. Kishore Kumar

- 9:15 AM: SPICES: Objectives & Achievements
- 9:25 AM: Wind Tunnel Experiments for SPICES-2022
- 10:00 AM: Purpose & Expectations from CFD Analysis
- 10:15 AM – 10:30 AM: Tea Break / Freewheeling Discussion

Session-II (10:30 AM – 12:45 PM)

Chairman: Prof. Avijit Chatterjee

- 10:30 AM: CFD Presentation 1 (ADA)
- 10:50 AM: CFD Presentation 2 (ADE)
- 11:10 AM: CFD Presentation 3 (VSSC)
- 11:30 AM: CFD Presentation 4 (Metacomp)
- 11:50 PM: CFD Presentation 5 (Zeus Numerix)
- 12:10 PM: Summary of SPICES-2022
- 12:45 PM – 1:45 PM: Lunch Break

Session-III (1:45 PM – 3:45 PM)

Chairman: Prof. N. Balakrishnan

- 1:45 PM – 3:45 PM: Felicitation of Prof. S.M. Deshpande
- 3:45 PM – 4:00 PM : Tea Break / Freewheeling Discussion

Session-IV (4:00 PM – 5:30 PM)

Chairman: Prof. S. M. Deshpande

- 4:00 PM : Panel Discussion & Future Directions
- 5:15 PM: Vote of Thanks
