



19th ISRAELI SYMPOSIUM ON JET ENGINES & GAS TURBINES TECHNICAL PROGRAM

November 17th, 2022 | Department of Aerospace Engineering, Technion - IIT | 08:00 - 17:00

Open for students, industry and academic staff | Free with mandatory registration until 27/10/2022

REGISTER HERE: <https://aijes.net.technion.ac.il/aijes-conference-registration>

08:00 REGISTRATION

08:30 OPENING SESSION - Auditorium 235

Prof. Wayne Kaplan, Vice President for External Relations, Technion

Prof. Tal Shima, Dean of Aerospace Engineering Department, Technion

Assoc. Prof. Beni Cukurel, Chairman of the Symposium, Technion

Lt. Col. Karin Bibi, Head of Propulsion Branch, Israeli Air Force

Lt. Col. Yigal Ben-Shabat, Head of Propulsion Systems Branch, Aeronautical Division, IMOD

09:00 KEYNOTE SESSION - Auditorium 235

Chair Lieut. Col. Yigal Ben-Shabat Head, Propulsion Systems Branch, Aeronautical Division, IMOD

A1 Dedicated Service Award

A2 Aircraft Engine Technology Award Lecture

A3 Gas Turbines Performance and Operation Flexibility Enhancement Enabled by Additive Manufacturing
Dr. Vladimir Navrotsky, Siemens Energy

10:25



10:40 SESSION 2B - Auditorium 235

CYCLES

Chair Dr. Amiram Leitner, Rafael

B1 Memorial Lecture
in Honor of Prof. David Lior
Ori Beck, Turbogren

B2 Performance Evaluation of
Hydrogen Oxyfuel Steam Cycles
*David Bocandé, Helmut-Schmidt-
University*

B3 Overcoming Thermodynamic
Efficiency Limit on Heat Turbines
Prof. Carmel Rotschild, Technion

B4 Full Engine Simulation of Small
Turbojets
Anil Eke, Katip Celebi University

B5 Starting and Windmilling
Simulations Using Thermodynamic
Cycle Program
*Dr. Joachim Kurzke, Gas Turbine
Performance Consulting*

SESSION 2C - Library 165

ADDITIVE MANUFACTURING TECHNOLOGIES

*Dr. Moshe Shapira, Bet Shemesh
Engines*

C1 Standardization and Qualification for
Metal Alloys in Additive Manufacturing
Dr. Gregory Brown, Velo3D

C2 Additive Manufacturing in Gas
Turbines
Jens Karnapp, EOS GmbH

C3 High Power Dynamic Beam Shaping
Laser Processing
*Dr. Aleksey Kovalevsky, Israeli Metal
Institute*

C4 Heat Treatment Effects for 3D AM
Printed 939 Nickel Alloy
Daniel Moreno, Bet Shemesh Engines

C5 Anisotropic Properties of 3D AM
Printed 316L Metal
Daniel Moreno, Bet Shemesh Engines

SESSION 2D - Classroom 240

MAINTENANCE, REPAIR AND OPERATIONS

Maj. Shani Eitan, Israeli Air Force

D1 Achieving Sustainable Aviation
Dr. Michael Winter, Pratt & Whitney

D2 Failure Investigation of
Compressor Rotor Blade
*Yohanan Nahmana, Bet Shemesh
Engines*

D3 Numerical Investigation of Flow
Distortion in Jet Engine Test Cell
Daniel Isakov, Israeli Air Force

D4 Spinning Digital Threads in
Aerospace
*Dr. Anil K. Tolpadi, General
Electric Aviation*

D5 The Curious Incident of Blade in
High Pressure Turbine
Inna Kaparovsky, Israeli Air Force

12:20



13:10 LABORATORY VISIT



14:00	SESSION 3E - Auditorium 235	SESSION 3F - Library 165
	<u>TURBINE AERODYNAMICS AND HEAT TRANSFER</u>	<u>REACTING FLOWS AND THERMAL MANAGEMENT</u>
Chair	<i>Ariel Cohen, Bet Shemesh Engines</i>	<i>Yochanan Nachmana, Bet Shemesh Engines</i>
E1	Aerodynamic Testing of High-Speed Low-Pressure Turbines: Challenges, Solutions, and Mistakes <i>Assoc. Prof. Sergio Lavagnoli, von Karman Institute</i>	F1 Experimental and Numerical Study of Liner Film Cooling and Combustor Swirl Flow Interaction <i>Dr. Anil K. Tolpadi, General Electric Aviation</i>
E2	Preliminary Design Studies for Turbine Suitable to Operate with Pressure Gain Combustors <i>Dr. Bayindir H. Saracoglu, von Karman Institute</i>	F2 Schlieren Visualization of Detonating Combustion <i>Dr. Ionut Porumbel, INCDT COMOTI</i>
E3	Skin Cooling of Turbine Airfoils by Single Wall Effusion <i>Yair Lange, Technion</i>	F3 On Nanosecond-Pulsed High-Frequency Plasma Ignition Regimes in Flowing Reactive Mixtures <i>Dr. Si Shen, Technion</i>
E4	Acoustic Flow Control Methodology in High Lift Airfoils <i>Acar Celik, Technion</i>	F4 Well-Stirred Reactor with Homogeneous Plasma for Development of Chemical Kinetic Model of Plasma, Ammonia and Air <i>Galia Faingold, Technion</i>

14:00	SESSION 3G - Classroom 240	SESSION 3H - Classroom 241
	<u>DIAGNOSTICS</u>	<u>SYSTEM LEVEL DESIGN</u>
Chair	<i>Ella Berlowitz Paska, Rafael</i>	<i>Itche Hochmann, Edmatech</i>
G1	Radiometric Measurements of Small Jet Engine and its Plume <i>Ohad Ophir, IARD Sensing Solutions</i>	H1 Development of 45 kW Recuperated Turboshift Gas Turbine <i>Fred Frigerio, UAV Turbines</i>
G2	Acoustic Analysis of Engine Operation and Events <i>Yohanan Nahmana, Bet Shemesh Engines</i>	H2 Additively Manufactured Pre-Assembled Turbojet Engine (APE) for Unmanned Aerial Vehicles <i>Michael Palman, Technion</i>
G3	Coating Thermal Properties Measurement via Induction Phase Radiometry <i>Shani Eitan, Israeli Air Force</i>	H3 Development of Additively Manufactured Ultra Micro Gas Turbine Generator <i>Lukas Badum, Technion</i>
		H4 Thrust Vectoring and After Burner System for Increasing Survivability of Micro-Jet UAVs <i>Dor Shitrit, Technion</i>

15:20



15:40	SESSION 4I - Auditorium 235	SESSION 4J - Library 165
	<u>COMPRESSOR/FAN AERODYNAMICS</u>	<u>COMBUSTORS</u>
Chair	<i>Yonatan Lobovikov, Rafael</i>	<i>Asst. Prof. Joe Lefkowitz, Technion</i>
I1	Design of a Radial Compressor for Additive Manufacturing <i>Prof. Tom Vestreat, von Karman Institute</i>	J1 Assessment of Methanol as an Alternative Fuel for Micro Gas Turbine <i>Ariel Sharon, Technion</i>
I2	Investigation of Splitter Tandem Stators for Highly-Loaded Low-Aspect-Ratio Transonic Fan Stage for a Small-Scale Turbofan <i>Assoc. Prof. Sercan Acarer, Katip Celebi University</i>	J2 Multipurpose Combustion Chamber for Testing Facilities of Airbreathing Engines <i>Yuri Perelstein, Rafael</i>
I3	Efficient High-Speed Compressors in Aircraft Engines <i>Dr. Hong Yu, Pratt & Whitney</i>	J3 Effect of N ₂ Dilution on H ₂ and H ₂ enriched CH ₄ Flame in Swirl Stabilized Premixed Combustor <i>Dr. Pawan Kumar Ojha, Technion</i>

15:40	SESSION 4K - Classroom 240	SESSION 4L - Classroom 241
	<u>ROTORDYNAMICS AND VIBRATIONS</u>	<u>CONTROLS</u>
Chair	<i>Ron Miezner, Technion</i>	<i>Alex Kleiman, Technion</i>
K1	Thermal Modal Analysis of Turbofan Blades Modeled as Rotating Thermoelastic Beams by Using Differential Transform Method <i>Mustafa Tolga Yavuz, Çağlar Uyulan, Katip Celebi University</i>	L1 Economic Dispatch of a Single Micro Gas Turbine Under CHP Operation with Uncertain Demands <i>Assoc. Prof. Daniel Zelazo, Technion</i>
K2	Configuration Adaptation of 3D AM Bearing Housing <i>Matan Zakai, Bet Shemesh Engines</i>	L2 Development of a Modular Plant Model for Real Time Testing of a Recuperated Engine FADEC <i>Diego Rocha, UAV Turbines</i>
K3	Ansys Turbomachinery Modelling with Aeromechanics Focus <i>Dvir Mandler, Ansys</i>	L3 Experimental Framework for Closed-Loop Control of Micro-Jet Engines <i>Dr. Arkady Lichtsinder, Rafael / Technion</i>

