ASME INTERNATIONAL GAS TURBINE INSTITUTE

ASME 2014 Gas Turbine India Conference

presented by the ASME International Gas Turbine Institute

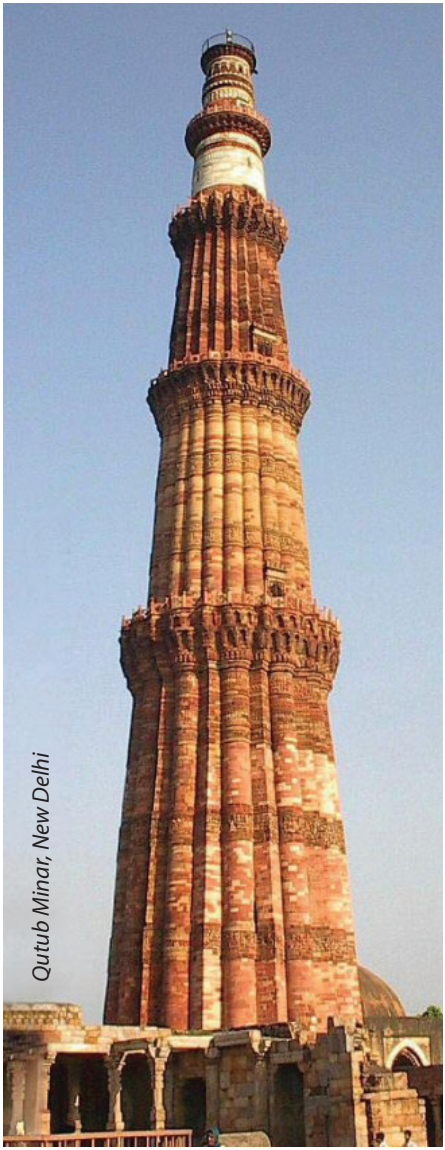
December 15-17, 2014

India Habitat Centre, New Delhi

FINAL PROGRAM

Welcome to DELHI

The capital city of the Republic of India & one of the fastest growing cities in the world. DELHI is a blend of tradition and the modernity, where ancient monuments co-exist with ultramodern high rise buildings and commercial plazas. Spread over an area of about 1485 sq.km at an altitude of 216 m above mean sea level and with a population of 10.1 million, Delhi is the third largest city. Main languages spoken are Hindi, English and Punjabi.



Qutub Minar, New Delhi

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ASME 2014 Gas Turbine

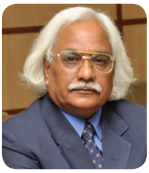
India Conference

Address:

India Habitat Centre
Lodhi Road
New Delhi - 110 003
INDIA

Message from the Conference Chair

Esteemed Delegates to the ASME 2014 Gas Turbine India Conference,



Prof. P. B. Sharma
Conference Chair
ASME Gas Turbine
India Conference
2014

On behalf of the ASME International Gas Turbine Institute, I would like to welcome you to the ASME 2014 Gas Turbine India Conference. As before, the primary focus of this conference is to bring together those from across India who are working in industry, academia, and government, as they hear and discuss the latest developments in gas turbine technology. Our endeavor has been to provide a platform to share great ideas from within India and other countries in Asia. We welcome participation from around the world and expect the GT India Conference to become known as a complement to the annual ASME Turbo Expo conference.

New Delhi is well known internationally for its historical past, its richness of an exciting blend of antiquity and modernity, being the knowledge capital of India and a hub for IT Industries. It is also the science and technology capital of India and hosts several Indian aeronautics and space education, research, design, development and manufacturing organizations. It is home to design and development centers of several multinational businesses engaged in gas turbine and allied technologies. As all these organizations and activities are well-represented in this conference, I expect your participation will prove to be a most rewarding experience.

There are 11 tracks this year: Compressors, Turbines, Combustion, Fuels & Emissions, Heat Transfer, Unsteady & Transitional Flows in Turbomachinery, Structure & Dynamics, Controls, Diagnostics and Instrumentation, GT Cycle Innovations, Renewable Applications, Manufacturing, Materials and Metallurgy, GT Operation, Maintenance, Repair, Refurbishment, Co-gen Application, Manufacturing, and Multidisciplinary Design Approaches, Optimization and Uncertainty Quantification. Over 100 technical papers that have been subjected to careful review by a broad range of experts worldwide will be presented. Panel presentations will provide summaries of accomplishments and thoughts to engage us for the future. We hope the scheduling will facilitate the best networking opportunities for all participants from industry, academia, and government. Further, I hope that the India Habitat Centre will provide the right ambience for this conference.

Finally, on behalf of the ASME International Gas Turbine Institute, we thank all who have supported the GT India conference through generous sponsorships. This event would not be possible without the hundreds of hours spent by the experts from academia and industry who served as reviewers, session organizers, and vanguard chairs, coordinated by Prof. Subrata Sarkar, Review Chair and Mr. Hemant Gajjar, Technical Program Chair. Our sincere thanks to Dr. Timothy Lieuwen, Review Chair, IGTI, Dr. M. Jayaraman, Conference Chair, GT India 2013 and Prof Bhaskar Roy for their support and guidance. Finally, much appreciation goes to the ASME IGTI staff who pulled everything together in a seamless way.

I look forward to your enthusiastic participation to create a bright future for mobility engineering, power and the aerospace sectors on the strength of the advancements in Gas Turbine Technology.

Sponsors

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Exhibitors

Exhibition Venue: CHARMINAR Area

Be sure to stop by and visit with the exhibitors at the Charminar area of the India Habitat Centre. Contact the ASME IGTI Staff or one of the Leadership Team to join us on the Show floor for GT India 2015.

Schedule at a Glance

Tuesday, December 16

Registration, India Habitat Centre, Entry Gate 3, Near Stein Auditorium	8:00 AM - 5:00 PM
Inauguration & Keynote Address, Stein Auditorium	9:00 AM - 10:30 AM
Exhibit Hall Open, Charminar	10:00 AM - 2:00 PM
Coffee Break & Networking, The Hub Garden	10:30 AM - 11:00 AM
Panel Discussion, Stein Auditorium	11:00 AM - 12:45 PM
Scholar Lecture: Dr. Hukam Mongia, "Future Trends in Commercial Aviation Engines" Combustion, Amaltas	11:00 AM - 12:45 PM
Lunch & Networking, The Hub Garden	12:45 PM - 1:45 PM
Student Posters, Adjacent to Stein Auditorium	1:45 PM - 6:15 PM
Afternoon Sessions	1:45 PM - 3:15 PM
Coffee Break & Networking, The Hub Garden	3:15 PM - 3:45 PM
Scholar Lecture: Prof. Srinath V. Ekkad, "Turbine Endwall Contouring and Cooling Studies", Stein Auditorium	3:45 PM - 4:45 PM
Special Invited Talk: Dr. Dave Wisler, "Teaching Engineering in a Manner Consistent with How People Learn", Amaltas	3:45 PM - 4:45 PM
Evening Sessions	4:45 PM - 6:15 PM
Networking, The Hub Garden	6:15 PM - 7:00 PM
Awards Dinner, The Hub Garden	7:00 PM - 9:00 PM

Wednesday, December 17

Registration, India Habitat Centre, Entry Gate 3, Near Stein Auditorium	8:00 AM - 5:00 PM
Morning Sessions 1	8:30 AM - 10:30 AM
Student Posters, Adjacent to Stein Auditorium	8:30 AM - 4:30 PM
Exhibit Hall Open, Charminar	10:00 AM - 2:00 PM
Coffee Break & Networking, The Hub Garden	10:30 AM - 10:45 AM
Scholar Lecture: Prof. Sumanta Acharya, "Prediction, Analysis and Optimization of Film Cooling Flows", Stein Auditorium	10:45 AM - 11:45 AM
Scholar Lecture: Prof. Alok Sinha, "Vibration of a Bladed Rotor: Mistuning and Friction Damping", Amaltas	10:45 AM - 11:45 AM
Morning Session 2	11:45 AM - 1:15 PM
Lunch & Networking, The Hub Garden	1:15 PM - 2:15 PM
Afternoon Sessions	2:15 PM - 4:30 PM
Coffee Break & Networking, The Hub Garden	4:30 PM - 4:45 PM

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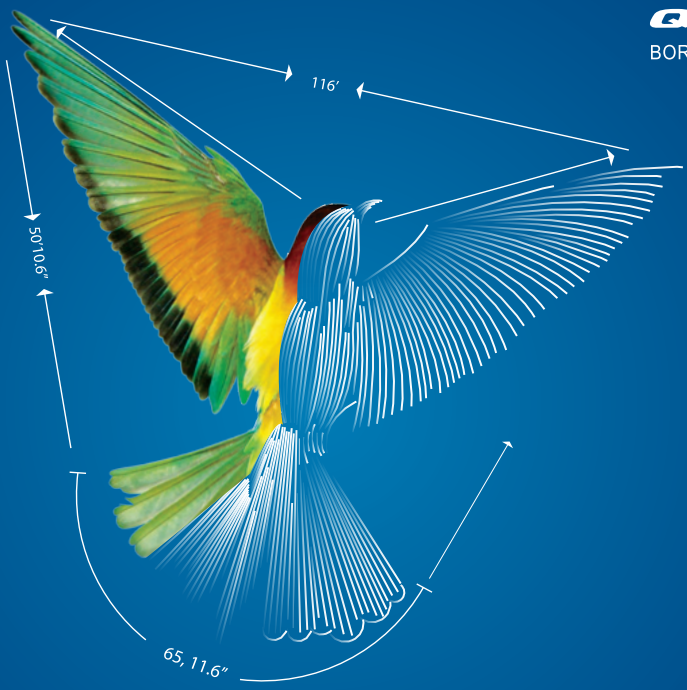

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http://engineering.quest-global.com

Keynote Session

Tuesday, December 16 | 9:00 AM – 10:30 AM

Stein Auditorium

Professor Nicholas A. Cumpsty
"Jet Propulsion: How, Why and Whither"

Nick Cumpsty studied Mechanical Engineering at Imperial College London. He conducted his postgradute research at the University of Cambridge, Department of Engineering, where he was awarded a Ph.D. for a dissertation entitled "The Calculation of Three-Dimensional Turbulent Boundary Layers". He has been Professor of Aerothermal Technology in the University of Cambridge and is a visiting professor in the Massachusetts Institute of Technology, in the Department of Aeronautics and Astronautics. Nick was a Senior Noise Engineer in Rolls-Royce from 1969-72 and then from 2000-5 Chief Technologist of Rolls-Royce. On retiring from Rolls-Royce he returned to the Department of Mechanical Engineering in Imperial College as a professor and served as Head of Department until retiring again. He is now Emeritus Professor and Distinguished Research Fellow.

Prof. Cumpsty has published 68 papers in International journals, 2 books, Chapters in 3 other books, 15 conference publications and 1 patent in UK & USA in his illustrious career.

Dinner Event

Tuesday, December 16, 2014 | 7:00 PM - 09:00 PM

The Hub Garden

All conference attendees are welcome to attend the Awards Dinner.

Conference Leadership Team		
Conference Chair	**Technical Program Chair**	**Review Chair**
Prof. P. B. Sharma Vice Chancellor, Delhi Technological University, New Delhi, India	**Mr. Hemant Gajjar** STEAG Energy Services (India) Pvt Ltd. Noida, India	**Prof. Subrata Sarkar** Indian Institute of Technology Kanpur, India

Vanguard Chairs

AM Pradeep
IIT Mumbai

Dhinagaran Ramachandran
LM Wind Power Technologies (India) Pvt. Ltd

Subhrajit Dey
GE Global Research

Suchismita Sanyal
GE Global Research

Abhijit Kushari
Indian Institute of Technology Kanpur

Rakesh Kumar
Sharma NTPC Ltd.

Dr. Prasad BVSSS
Indian Institute of Technology Madras

Sanjay Mittal
Indian Institute of Technology Kanpur

Joseph Mathew
Indian Institute of Science Bangalore

Joseph Machnaim
GE Global Research

Baskaran Bhuvaraghan
GEITC

Bhaskar Roy
Indian Institute of Technology Bombay

Bishakh Bhattacharya
Indian Institute of Technology Kanpur

Subrata Sarkar
IIT Kanpur

Session

Panel Discussion

Tuesday, December 16, 2014
11:00 AM – 12:45 PM

Stein Auditorium

The panel session on "Technology Trends in GT for Power Generation" is intended to bring together a distinguished number of panelists, who would highlight the current technologies and those that would be used in future GT for power generation, as well as the customer demands and expectations. Meeting the power demands of an emerging economy like India and Asia at large is a very challenging task. Gas turbine based power generation has tremendous potential in realizing this challenge. The experts would be putting forth their views and discuss about the technological challenges being faced, and the technology development strategy taking shape. Gas turbine it is going to remain an important element in power generation, and this session would be useful towards better understanding this technology.

Panelists

Mr. Anil Gulati
Director, Gas Turbine Engineering, Siemens Energy Inc.

Mr. Mariasundaram Anthony
GM, India Engineering Operations, GE Power & Water

Mr. Eisaku Ito Dr. Eng.
Deputy General Manager, Takasago R&D Center, Mitsubishi Heavy Industries, Ltd.

Mr. Arunendu Saha
Vice President of GMR Energy Limited

Scholar Lectures

Dr. Hukam Mongia, Purdue University

Future Trends in Commercial Aviation Engines' Combustion

Tuesday, December 16, 2014 | 11:00 AM – 12:45 PM
Amaltas

Abstract
This lecture gives an overview of the current rich-dome combustion system design, requirements, challenges, three alternatives to rich domes, lean dome NOx entitlement, alternative fuels, operability, dynamics and accuracy level expectations from modeling and engineering correlations.

Biography
Dr. Mongia joined Purdue on February 2, 2009 as Professor of Mechanical Engineering to work jointly with his colleagues and students to initiate and grow research and technology activities relevant to next-generation energy efficient fuel-flexible ultra-low emissions gas turbine engines for propulsion and power generation.

During his 37-year career with three engine design and manufacturing companies (GE Aviation, Allison now Rolls Royce of North America, and Garrett now Honeywell Aerospace), he has contributed significantly in developing combustion technology, design methodology and tools in addition to transition of technology into products; e.g., TAPS for GEnx and other future GE propulsion and aeroderivative industrial engines.

Dr. Mongia with several professional recognition awards including four best technical papers, NASA's Turning Goals into Reality on Emissions, the four very prestigious awards, viz. the AIAA Air Breathing Propulsion Award, the AIAA Propellant and Combustion Award, the Edison Award and the Egbert Award is credited with more than 30 combustion patents and 300 publications.

Srinath Ekkad, Virginia Tech

Turbine Endwall Contouring and Cooling Studies

Tuesday, December 16, 2014 | 03:45 PM-04:45 PM
Stein Auditorium

Abstract
Modern gas turbine engines operate well beyond the melting point of the turbine component materials to meet the enhanced efficiency requirements especially in the initial high pressure stages (HPT) after the combustor exit. A major portion of the heat load to the airfoil and passage is reduced through injection of secondary air from high pressure compressor at the expense of a penalty on engine performance. External film cooling comprises a significant part of the entire convective cooling scheme. Endwall contouring on the other hand provides an effective means of minimizing heat load on the platform through efficient control of secondary flow vortices. This presentation provides insight into an investigation of aerodynamic and heat transfer characteristics of a non-axisymmetric contoured endwall design compared to a baseline planar endwall geometry in presence of three major endwall cooling features – upstream purge flow, discrete hole film cooling and mateface gap leakage under transonic operating conditions. The experiments were performed at Virginia Tech's quasi linear transonic blow down cascade facility. Results indicate significant benefits in aerodynamic and heat transfer performance using the contoured endwall in presence of individual (upstream slot, discrete hole and mateface gap) and combined (upstream slot with mateface gap) cooling flow features. Major advantages of endwall contouring were observed through reduction in heat transfer coefficient and increase in coolant film coverage by weakening the effects of secondary flow and cross passage pressure differential.

Biography
Srinath Ekkad is currently Rolls-Royce Commonwealth Professor for Aerospace Propulsion Systems in the Mechanical Engineering Department at Virginia Tech. He received his PhD from Texas A&M University in 1995. He worked for two years at Rolls-Royce Indianapolis before joining LSU in 1998. He rose through the ranks at LSU and joined Virginia Tech in 2007. He will also be serving as the Director of Commonwealth Center for Aerospace Propulsion Systems at Virginia Tech and the newly announced Rolls-Royce University Technology Center (RR UTC) for Advanced Diagnostics at Virginia Tech. Dr. Ekkad has over 200 peer reviewed journal and conference publications and has co-authored a seminal book on gas turbine cooling and heat transfer technology.

Scholar Lectures

David Wisler, Ph.D., NAE, MIT CDIO Engineering Education Initiative; GE Aviation (formerly GE Aircraft Engines), retired

"Teaching Engineering in a Manner Consistent with How People Learn"

Tuesday, December 16, 2014 | 3:45 PM – 4:45 PM
Amaltas Room

Abstract

Engineering, more than any other discipline, has transformed people's lives for the better. It brings technology to life and nourishes the well-being, prosperity and growth of a nation. Therefore to remain competitive and be a world leader, a nation must assure that its engineers are properly educated. With the advent of the research university in the last half of the 20th century, the pendulum of engineering pedagogy swung from a practice-based curriculum to an engineering science-based model. Engineering faculty have increasingly moved from teachers who had real, engineering work experience to those engaged almost totally in research with no practical engineering experience. This produced a fundamental change in the qualifications of graduating engineers, a change that industry wants corrected. At the same time, a revolution in the study of the human mind and how people learn took place. Unfortunately in too many cases, the findings of this research have not affected engineering pedagogy. This seminar presents an approach to resolve these issues in a manner that produces engineers who are 'ready to engineer' when they graduate. It covers the following major topics: (1) the fundamentals of how people learn and the core learning principles, (2) methods for teaching engineering effectively, and (3) CDIO, the innovative framework that revitalizes engineering education by integrating traditional disciplinary knowledge with engineering practice skills to provide industry with the talent it needs and seeks.

Biography

Dr. Wisler's distinguished career at GE Aviation spanned 38-years. He is a member of the US National Academy of Engineering and was inducted into the GE Aviation Propulsion Hall of Fame in recognition of his lasting and widespread impact on the aviation industry and GE's business. From GE, Dr. Wisler joined MIT's CDIO Initiative to revitalize engineering education worldwide. The goal of CDIO is to produce engineers who are "ready to engineer" at graduation. There are currently over 90 universities participating in the CDIO Initiative.

Dr. Wisler is a Life Fellow of the American Society of Mechanical Engineers (ASME), the Editor of the ASME Journal of Turbomachinery and an Associate Fellow of the AIAA. He is a past ASME Sr. Vice President and Past Chair of the Board of Directors of the International Gas Turbine Institute (IGTI) of the ASME. He is an honorary member of the Gas Turbine Society of Japan.

Alok Sinha, Pennsylvania State University

Vibration of a Bladed Rotor: Mistuning and Friction Damping

Wednesday, December 17, 2014 | 10:45 AM - 11:45 AM
Amaltas Room

Abstract
Mistuning refers to small blade to blade variations in geometry, material properties etc. due to manufacturing tolerances. It can result in a significant amplification of a blade's vibration. First, the fundamental aspects of mistuned bladed disk vibration will be discussed. Next, the development of an accurate reduced-order model of a bladed rotor with geometric mistuning will be presented. This technique is being called Modified Modal Domain Analysis (MMDA), which utilizes proper orthogonal decomposition (POD) of Coordinate Measurement Machine (CMM) data on blades' geometries, and sector analyses using ANSYS and solid modeling. Numerical results will be presented and compared to those from full 360 degree bladed rotor modeling in ANSYS. It will be shown that MMDA provides accurate estimates of natural frequencies, mode shapes and forced response. Lastly, design of friction dampers to minimize the vibratory stresses in blades will be presented. Three different types of excitation: white noise excitation, independent narrow band random excitation and sinusoidal excitation with unknown amplitudes, will be considered. The performances of blade-to-blade and blade-to-ground dampers are compared under different types of excitation. It is found that the non-dimensional optimal normal loads of friction dampers are almost independent of the nature of excitation. Therefore, optimal normal loads of friction dampers can be chosen without any knowledge of the nature of excitation.

Biography
Alok Sinha is a Professor of Mechanical Engineering at The Pennsylvania State University, University Park, USA. He is an IIT Delhi alumnus, and received his Ph.D. degree from Carnegie Mellon University Pittsburgh. He has been a PSU (Penn State) faculty since August 1983. His areas of teaching and research are Vibration, Control Systems, Jet Engines, Robotics, Neural Engineering and Nanotechnology. He has authored a graduate textbook "Linear Systems: Optimal and Robust Control" and an undergraduate textbook "Vibration of Mechanical Systems."

He has served as a Visiting Faculty of Aeronautics and Astronautics at MIT, Cambridge, MA and as a researcher at Pratt & Whitney, E. Hartford, CT. He has also been an associate editor of ASME Journal of Dynamic Systems, Measurement and Control and ASME Journal of Turbomachinery. At present, he serves as an Associate Editor of AIAA Journal.

He is a Fellow of American Society of Mechanical Engineers (ASME), a Fellow of American Association for the Advancement of Sciences (AAAS), and an Associate Fellow of American Institute of Aeronautics and Astronautics (AIAA).

Scholar Lectures

Sumanta Acharya, University of Memphis

Prediction, Analysis and Optimization of Film Cooling Flows

Wednesday, December 17, 2014 | 10:45 AM - 11:45 AM
Stein Auditorium

Abstract

The efficiency of gas turbines used for aero-propulsion and land-based power generation is correlated with the turbine inlet temperature. Modern gas turbines have turbine inlet temperatures in excess of 30000 F that exceed the material limits of the turbine airfoils. Therefore, the first stage airfoils have to be actively cooled. One cooling strategy that is commonly employed is film cooling where coolant air bypassed from the compressor is discharged via discrete holes on the blade surface. The basic unit problem can be considered to be of a coolant jet discharging through a delivery tube at an angle to the surface. In this seminar, the dynamics of the film cooling jet issuing from an inclined delivery tube into the crossflow is presented using Direct Numerical Simulations (DNS) and Large Eddy Simulations (LES). The energetic modes that contribute to the cooling of the surface are identified and analyzed. Modal analysis of the simulation data is performed to understand what modes and associated flow structures play the key role in determining the cooling effectiveness and surface temperature variations. The effect of hole exit-shapes on the flowfield and the modal behavior is examined. It is shown that a V-shaped crater has a significant effect on the flowfield and heat transfer downstream of the hole. The effect of uncertainty in the velocity ratio (i.e., ratio of coolant jet velocity to mainstream flow velocity) on the cooling effectiveness is also presented from a probabilistic point of view.

Biography

Prof Sumanta Acharya completed his B. Tech in mechanical engineering from IIT Kharagpur and obtained his doctoral degree form the University of Minnesota. For the majority of his academic career he has been on the faculty of mechanical engineering at Louisiana State University where he held the position of L. R. Daniel Professor of Mechanical Engineering and the Director of Turbine Innovation & Energy Research (TIER) Center. His interests are in computational fluids, gas turbine heat transfer and combustion, and he has published or presented nearly 190 journal articles and book chapters and over 225 refereed conference papers on these and related fields. He has supervised the work of nearly 85 graduate students and postdoctoral researchers. He is the recipient of the ASME Heat Transfer Memorial Award, the AIChE/ASME Donald Q. Kern Award, the LSU Distinguished Research Master Award, and three best-teacher awards from students. From 2010-2014 he served at the National Science Foundation as the Program Director of the Thermal Transport Process in the Chemical, Bio-Engineering, Environmental and Transport (CBET) Division. Currently he is Department Chair and the Ring Companies Endowed Chair at the University of Memphis.

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TUESDAY, DECEMBER 16, 2014

COMM 12 Panel Discussions

Point Contact: Joseph Machnaim, *GE Global Research, Bangalore, India*

12-1
TECHNOLOGY TRENDS IN GT FOR POWER GENERATION

India Habitat Centre, Stein Auditorium ***11:00am - 12:45pm***

COMM 14 Scholar Lectures

Point Contact: Subrata Sarkar, *IIT Kanpur, Kanpur, India*

14-1
FUTURE TRENDS IN COMMERCIAL AVIATION ENGINES? COMBUSTION (BY DR HUKAM MONGIA)

India Habitat Centre, Amaltas ***11:00am - 12:45pm***

Session Chair: Joseph Machnaim, *GE Global Research, Bangalore, India*

Future Trends in Commercial Aviation Engines? Combustion
Technical Presentation Only. GTINDIA2014-8391
Hukam Mongia, *Purdue University, West Lafayette, IN, United States*

COMM 1 Compressors

Point Contact: AM Pradeep, *IIT Mumbai, Mumbai, India*

1-5
COMPRESSORS: STRUCTURAL ISSUES ETC

India Habitat Centre, Amaltas ***1:45pm - 3:15pm***

Session Chair: Seerangan Murugesan, *General Electric, Bangalore, India*

Techniques and Methods to Improve the Dynamic Strength of Gas Turbine Engines Compressor Rotor Wheels
Technical Publication. GTINDIA2014-8203

Grigorii Popov, Daria Kolmakova, Aleksandr Shklovets, Aleksandr Ermakov, *Samara State Aerospace University, Samara, Samara, Russia*

Prediction of Fatigue and Fracture Life of an Autofrettaged Turbine Compressor Disc Using Finite Element Analysis
Technical Publication. GTINDIA2014-8243

SUMAN M. L. J., SRIKARI Srinivasan, MAHESH G, VINOD KUMAR BANTHIA, *M S Ramaiah University of Applied Sciences, Banga-lore, Karnataka, India*

Prediction And Comparison Of Critical Speeds And Potential Excitation Using Inhouse Developed Software For A Integrally Geared Centrifugal Air Compressor
Technical Publication. GTINDIA2014-8247

Mathew P James, *ELGI Equipments Ltd, Coimbatore, Tamilnadu, India,* **Pavan Kumar Reddy Pandillapalli,** *Elgi Equipments, Ltd, Coimbatore, Tamilnadu, India,* **Swaminathan Gopalakrishnan,** *ELGI Equipments Ltd., Tamil Nadu, TN, India*

COMM 3 Combustion, Fuels & Emissions

Point Contact: Abhijit Kushari, *Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India*

3-2
NON-PREMIXED COMBUSTION

India Habitat Centre, Magnolia ***1:45pm - 3:15pm***

Session Chair: Ashoke De, *IIT Kanpur, Kanpur, India*
Session Co-Chair: Vaibhav Arghode, *IIT Kanpur, Kanpur, India*

Structure of the Velocity and Soot Concentration Fields of a Swirl Stabilized Turbulent Non Pr mixed Flame in a Gas Turbine Model Combustor
Technical Publication. GTINDIA2014-8114

Sandipan Chatterjee, *Christopher Halmo, University of Toronto, Toronto, ON, Canada,* **Omer L. Gulder,** *University of Toronto, Institute for Aerospace Studies, Toronto, ON, Canada*

Plasma-Fuel Systems for Fuel Preparation, Ignition, Combustion and Gasification
Technical Publication. GTINDIA2014-8124

Vladimir Messerle, *Alexandr Ustimenko, Research Institute of Experimental and Theoretical Physics NTO Plasmotechnics, Al-maty, Kazakhstan, Oleg Lavrichshev, Research Institute of Experimental and Theoretical Physics, Almaty, Kazakhstan*

COMM 6 Structure & Dynamics

Point Contact: Baskaran Bhuvaraghan, *GEITC, Bangalore, Karnataka, India*

6-2
DESIGN -I

India Habitat Centre, Maple ***1:45pm - 3:15pm***

Session Chair: Raghavan KS, *Cyient Limited, Hyderabad, India*

Session Co-Chair: Manish Kumar Purohit, *Siemens India, New Delhi, India*

Application of Genetic Algorithm for Fault Detection in Cracked Composite Structure
Technical Publication. GTINDIA2014-8269

Amiya Kumar Dash, *Institute of Technical Education and Research, S 'O' A University, Bhubaneswar, India,* **Deepak Kumar Agarwalla,** Institute of Technical Education and Research, Bhubaneswar, India, **Prof. Harish Ch. Das,** *Institute of Technical Educa-tion and Research, S 'O' A University, Bhubaneswar, Select State/Province, India,* **Dr. Malay Kumar Pradhan,** *Directorate of Facto-ries and Boilers, Govt. of Odisha, Bhubaneswar, India,* **Sambit Kumar Bhuyan,** *Institute of Technical Education and Research, S 'O' A University, Bhubaneswar, India*

Three - Dimensional Finite Element Analysis of Bolted Joint with Helical Thread Connection
Technical Publication. GTINDIA2014-8249

Kondaiah Bommisetty, Kumar Narayanan, *Cyient Limited, Bangalore, India*

Bolted Joint Simulation Techniques in Gas Turbine Components
Technical Publication. GTINDIA2014-8262

Kuberappa Jalammanavar, Lakshman Kasina, *Cyient Ltd, Hyderabad, Andhra Pradesh, India,* **Raghavan KS,** *Cyient Limited, Hy-derabad, India,* **Prasanna Kumar H S, Ramakrishnayya Guptha Kuncham,** *Cyient Ltd, Hyderabad, India*

COMM 7 Controls, Diagnostics and Instrumentation

Point Contact: Bishakh Bhattacharya, Indian Institute of Technology Kanpur, India

7-1
CONTROL AND INSTRUMENTATION

India Habitat Centre, Casaurina ***1:45pm - 3:15pm***

Session Chair: Rituparna Datta, *IIT Kanpur, Kanpur, India*

A New Real Time Path Planning for Mobile Robot Navigation Using Invasive Weed Optimization Algorithm
Technical Publication. GTINDIA2014-8166

Prases Mohanty, *National Institute of Technology, Rourkela, India,* **Dayal R. Parhi,** *National Institute of Technology, ROURKELA, ODISHA, India*

Reynolds Number Effects on the Calibration of A Subminiature Four Hole Three Dimensional Wake Probe
Technical Publication. GTINDIA2014-8215

Gajanan C T, *IIT MADRAS, Chennai, India,* **Dr. Sitaram N.,** *Indian Institute of Technology Madras, Chennai, India*

Neural Predictive Controller for Hydraulic Power Transmission in Wind Turbine
Technical Publication. GTINDIA2014-8293

Akshan Paresh Mehta, Ganesh Ram R K, Kalaichelvi Venkatesan, Karthikeyan Ramanujam, *BITS PILANI DUBAI CAMPUS, Dubai, Dubai, United Arab Emir.*

COMM 8 GT Cycle Innovations, Renewable Applications

Point Contact: Dhinagaran Ramachandran, *LM Wind Power Technologies (India) Pvt. Ltd, Bangalore, India*

8-1
GT CYCLE INNOVATIONS -I

India Habitat Centre, Stein Auditorium ***1:45pm - 3:15pm***

Session Chair: Amitava Datta, *Department of Power Engineering, Kolkatta, West Bengal, India*

Energy and Exergy Analysis of the Kalina Cycle Based Combined Cycle Using Solar Heating
Technical Publication. GTINDIA2014-8192

Mayank Maheshwari, *Babu Banarsi Das University, Kanpur, India,* **Onkar Singh,** *HARCOURT BUTLER TECHNOLOGICAL INSTITUTE, KANPUR, Uttar Pradesh, India*

Designing Supercritical CO2 Power Plants using an Integrated Design System
Technical Publication. GTINDIA2014-8225

Abdul Nassar, *SoftInWay Turbomachinery Solutions Pvt. Ltd., Bangalore, Karnataka, India,* **Leonid Moroz, Maksym Burlaka,** *Soft-inway Inc., Burlington, MA, United States, Petr Pagur, SoftInWay Inc., Kharkov, Ukraine,* **Yuri Govo uschenko,** *SoftInWay Inc, Kharkov, Ukraine*

COMM 9 Manufacturing, Materials and Metallurgy

Point Contact: Suchismita Sanyal, *GE Global Research, Bangalore, India*

9-1
SURFACE ENGINEERING

India Habitat Centre, Kadamba ***1:45pm - 3:15pm***

Session Chair: Anand K, GE, *Bangalore, Karnataka, India*

Low Velocity Impact Resistance Research with SMA Composite Material
Technical Publication. GTINDIA2014-8362

Rongqiao Wang, Ao Jia, Dianyin Hu, *Beihang University, Beijing, Beijing, China,*
Jun Song, *McGill University, Montreal, QC, Canada*

COMM 13 Student Posters

Point Contact: Bhaskar Roy, *Indian Institute of Technology Bombay, Mumbai, Select State/Province, India*

13-1
DESIGN -I

India Habitat Centre, Adjacent to Stein Auditorium ***1:45pm - 6:15pm***

Session Chair: Bhaskar Roy, *Indian Institute of Technology Bombay, Mumbai, Select State/Province, India*

The Near Wall Boundary Layer Numerical Study on A Gas Turbine Nozzle Guide Vane
Poster Presentation. GTINDIA2014-8238

Khashayar Khorsand, *KTH Royal Institute of Technology, Stockholm, Kista, Sweden*

Parametric Performance Analysis of Natural Gas Fired Combined Cycle Power Plant using Biomass as Supplementary Fuel
Poster Presentation. GTINDIA2014-8376
VIKASH DEWANGAN, *RSR RCET, bhilai, CG, India*

Combustion Modeling with CFD in Direct Injection CI engine fuelled with biodiesel
Poster Presentation. GTINDIA2014-8378

AJAY KOLHE, *Kavikulguru institute of technology and science, Ramtek, India,* **Rajesh Shelke,** *Govt. I.T.I. Daryapur, Daryapur, India*

Performance evaluation of convergent divergent nozzle by riblet surface using cfd flow simulation
Poster Presentation. GTINDIA2014-8379
Abilesh Ganesan, *QuEST Global India Pvt Ltd, Bangalore, India*

STRUCTURAL COMPARISON OF INTEGRALLY BLADED ROTOR WITH ASSEMBLED ROTOR TURBINES
Poster Presentation. GTINDIA2014-8380

Mohamed Thasleem, *QuEST global india pvt ltd, kunnamkulam, kerala, India,*
Muhammed Shareef M, *Nehru Institute of Technology, Coimbatore, India*

The prospect of the use of intelligent algorithms for decision tasks monitoring and diagnostic digital system of automatic control (SAC) Gas Turbine Engine (GTE)
Poster Presentation. GTINDIA2014-8381

Omair Alhatim, *King AbdulAziz City for Science & Technology, Riyadh, SAUDI ARABIA, Saudi Arabia*

Performance and Combustion analysis of Jatropha, Karanja(Pongamia) and Cottonseed oil biodiesel as alternate fuel in a diesel engine
Poster Presentation. GTINDIA2014-8383

AJAY KOLHE, *Kavikulguru institute of technology and science, Ramtek, India*

Simulation of gas turbine' compressor blade for enhancement of efficiency of gas turbine using ANSYS
Poster Presentation. GTINDIA2014-8384

Rahul Rao, *Nit Patna, Patna, India*

Performance Analysis of Ocean Energy Harvesting Turbine
Poster Presentation. GTINDIA2014-8385

Paresh Halder, *IIT Madras, Chennai, Tamil Nadu, Tamil Nadu, India*

Control of secondary atomization pathways in burning functional droplets: The effect of nanoparticle loading rate and external acoustic excitation
Poster Presentation. GTINDIA2014-8386

Ankur Miglani, Saptarshi Basu, *Indian Institute of Science, Bangalore, India*

COMM 14 Scholar Lectures

Point Contact: Subrata Sarkar, *IIT Kanpur, Kanpur, India*

14-2
TURBINE ENDWALL CONTOURING AND COOLING STUDIES (BY DR SRINATH V EKKAD)

India Habitat Centre, Stein Auditorium ***3:45pm - 4:45pm***

Session Chair: Subrata Sarkar, *IIT Kanpur, Kanpur, India*

Turbine Endwall Contouring and Cooling Studies
Technical Presentation Only. GTINDIA2014-8387

Srinath Ekkad, *Virginia Tech, Blacksburg, VA, United States*

14-3
TEACHING ENGINEERING IN A MANNER CONSISTENT WITH HOW PEOPLE LEARN (SPECIAL INVITED TALK BY DR DAVE WISLER)

India Habitat Centre, Amaltas ***3:45pm - 4:45pm***

Session Chair: Bhaskar Roy, *Indian Institute of Technology Bombay, Mumbai, Select State/Province, India*

Teaching Engineering in a Manner Consistent with How People Learn
Invited Presentation. GTINDIA2014-8388

David Wisler, *GE Aviation (GE Aircraft Engines), Fairfield, OH, United States*

COMM 1 Compressors

Point Contact: AM Pradeep, *IIT Mumbai, Mumbai, India*

1-3
CENTRIFUGAL COMPRESSORS

India Habitat Centre, Amaltas ***4:45pm - 6:15pm***

Session Chair: R. Rajendran, *Proplulsion Division, Bangalore, Karnataka, India*
Session Co-Chair: Dr. Nagpurwala *Q. H., M. S. Ramaiah University of Applied Sciences, Bangalore, India*
CFD-Modeling of Powerful Screw Centrifugal Kerosene Pump
Technical Publication. GTINDIA2014-8145

Vasily Zubanov, *Alexander Krivcov, Leonid Shabliy, Samara State Aerospace University, Samara, Russia*

Analysis of Flow Through a Twisted Vaned Diffuser
Technical Publication. GTINDIA2014-8163

Venkateswara Rao Pothuri, Venkata Ramana Murty Govindaraju, Venkata Rao Ganapathiraju, Vasavi College of Engineering, Hy-derabad, Andhra Pradesh, India

Performance Enhancement of the Centrifugal Compressor Stage with a Rotating Vaneless Diffuser ? A Numerical Study
Technical Publication. GTINDIA2014-8179

Seralathan Sivamani, Roy Chowdhury D G, *Hindustan University, Padur, Tamil Nadu, India*

COMM 3 Combustion, Fuels & Emissions

Point Contact: Abhijit Kushari, *Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India*

3-3
UNSTEADY COMBUSTION

India Habitat Centre, Magnolia ***4:45pm - 6:15pm***

Session Chair: Santosh Hemchandra, *Indian Institute of Science, Bangalore, India*
Session Co-Chair: Sathesh Mariappan, *Indian Institute of Technology Kanpur, Kanpur, India*

Investigation of combustion instability in a swirl stabilized combustor using symbolic time series analysis
Technical Publication. GTINDIA2014-8280

Vikram Ramanan, *IIT Madras, Chennai, Tamil Nadu, India,* **Soumalya Sarkar,** *Pennsylvania State University, University Park, PA, United States,* **Ashok Ray,** *Penn State Univ, University Park, PA, United States,* **Satyanarayanan Chakravarthy,** *Indian Institute of Technology Madras, Madras, India*

Investigation of Flame Dynamics in a V Flame Combustor During Combustion Instability
Technical Publication. GTINDIA2014-8345

R. Vishnu, R. I. Sujith, Preeti Aghalayam, *Indian Institute of Technology Madras, Chennai, Tamil Nadu, India*

COMM 6 Structure & Dynamics

Point Contact: Baskaran Bhuvaraghan, *GEITC, Bangalore, Karnataka, India*

6-3
DESIGN -II

India Habitat Centre, Maple ***4:45pm - 6:15pm***

Session Chair: Raghavan KS, *Cyient Limited, Hyderabad, India*
Session Co-Chair: Manish Kumar Purohit, *Siemens India, New Delhi, India*
Novel Approach Towards Thrust Bearing Pad Cooling
Technical Publication. GTINDIA2014-8165

F A Najar, GA Harmain, *NIT SRINAGAR, srinagar, India*

A Theoretical and Computational Analysis of The Bolted Joint - A Sensitivity Study of Temperature Effect on The Turbocharger Inlet Bolted Joint in Locomotive Engines
Technical Publication. GTINDIA2014-8196

Ali K. Khudhir, Mahesh Aggarwal, Michael Panza, *Gannon University, Erie, PA,United States, Michael Sirak, General Electric, Erie, PA, United States*

Configuration of Structural steel for Gas Turbine Accessories
Technical Presentation Only. GTINDIA2014-8348

KIRAN SWARUP KASTURI, *GENERALELECTRIC, BANGALORE, KARNATAKA,India,* **Haribalakrishnan S,** *General Electric, Bangalore, Karnataka, India*

COMM 7 Controls, Diagnostics and Instrumentation

Point Contact: Bishakh Bhattacharya, *Indian Institute of Technology Kanpur, Kanpur, India*

7-2
CONDITION AND HEALTH MONITORING

India Habitat Centre, Casaurina ***4:45pm - 6:15pm***

Session Chair: Samit Ray Chaudhuri, IIT Kanpur, Kanpur, India

Experimental Investigation of Squeeze Film Damper Characteristics at High Speed Rotor Configurations
Technical Publication. GTINDIA2014-8186

Jayaraman Kandasamy, B.L Jaiswal, P Sarasu, S Sivaperumal, Dilli Babu, Ashok Kumar, *Vel Tech Dr. RR & Dr. SR Technical Uni-versity, Chennai, Tamilnadu, India*

Development of a damper control system for combined cycle thermal gas power plant.
Technical Publication. GTINDIA2014-8118

Amit Kr. Mondal, Vindhya Devalla, Vivek Kaundal, Kamal Bansal, *University of Petroleum and Energy Studies, Dehradun, Uttarak-hand, India*

COMM 8 GT Cycle Innovations, Renewable Applications

Point Contact: Dhinagaran Ramachandran, *LM Wind Power Technologies (India) Pvt. Ltd, Bangalore, India*

8-2
GT CYCLE INNOVATIONS -II

India Habitat Centre, Stein Auditorium ***4:45pm - 6:15pm***

A CCGT Based Polygeneration Using Rice Straw: Simulation by Aspen Plus ®

Technical Publication. GTINDIA2014-8257

Kuntal Jana, Sudipta De, *Jadavpur University, kolkata, West Bengal, India,* **Mohsen Assadi,** *Center for Sustainable Energy Solu-tions, University of Stavanger, Stavanger, Norway,* **Mohammad Mansouri Majoumerd,** *University of Stavanger, Stavanger, Norway*

WEDNESDAY, DECEMBER 17, 2014

COMM 1 Compressors

Point Contact: AM Pradeep, *IIT Mumbai, Mumbai, India*

1-2
AXIAL COMPRESSORS-II

India Habitat Centre, Amaltas ***8:30am - 10:30pm***

Session Chair: Bhaskar Roy, *Indian Institute of Technology Bombay, Mumbai, Select State/Province, India*

Experimental Investigation of Unsteady Flow in a Transonic Uni-Stage Axial Compressor
Technical Publication. GTINDIA2014-8167

Satish Kumar, *National Aerospace Labs, Bangalore, Karnataka, India,* **Dilipkumar Bhanudasji Alone,** *CSIR-NAL, Bangalore, India,* **Shobhavathy M . Thimmaiah,** *National Aerospace Laboratories, Bangalore, Karnataka, India,* **Janaki Rami Reddy Mudipalli,** *CSIR-National Aerospace Laboratories, Bangalore, India,* **Ranjan Ganguli,** *Indian Institute Of Science, Bangalore, Karnataka, India,* **S B Kandagal,** *Indian Institue of Science, Bangalore, India,* **Soumendu Jana,** *National Aerospace Labrato-ries, Bangalore, Karnataka, India*

Numerical Investigation of Crosswind Effect on Different Rear Mounted Engine Installations
Technical Publication. GTINDIA2014-8171

Hairun Xie, Yadong Wu, Anjenq Wang, *Sahnghai Jiao Tong University, Shanghai, China,* **HUA OUYANG,** *Shanghai Jiao Tong Uni-versity, SHANGHAI, Select State/Province, China*

Nacelle: Air Intake Aerodynamic Design and Inlet Compatibility
Technical Publication. GTINDIA2014-8182

Jingjing Chen, Zhonglin Wang, Yadong Wu, Anjenq Wang, *Sahnghai Jiao Tong University, Shanghai, China*

Numerical Analysis to Investigate the Effect of Swept Rotor on the Overall Performance of a Transonic Compressor Stage
Technical Publication. GTINDIA2014-8216

Shobhavathy M . Thimmaiah, *National Aerospace Laboratories, Bangalore, Karnataka, India,* **Ramesha G, Nisha Sherief,** *CSIR-NAL, Bangalore, India*

COMM 2 Turbines

Point Contact: Subhrajit Dey, *GE Global Research, Bangalore, India*

2-1
TURBINE AERO-THERMAL

India Habitat Centre, Stein Auditorium ***8:30am - 10:30pm***

Session Chair: Hiteshkumar Mistry, *GE Global Research, Bangalore, India*

Studies on Transitional Heat Transfer Characteristics over Turbine Vane Surface Using a High Order LES Approach
Technical Publication. GTINDIA2014-8138

Debasish Biswas, *Toshiba Corp, Kawasaki-ku 210, Japan*

Reduction in Secondary Losses in Turbine Cascade Using Contoured Boundary Layer Fence
Technical Publication. GTINDIA2014-8175

Srikanth Deshpande, *Lund University, Lund, Sweden,* **Marcus Thern,** *Lund University, Faculty of Engineering, Lund, Sweden,* **Mag-nus Genrup,** Lund University, Lund, Sweden

Studies on the Impact of Choice of Gas Models in an Un-Cooled Turbine Stage
Technical Publication. GTINDIA2014-8212

Karthik Srinivasan, *QuEST Global, Bangalore, Karnataka, India,* **David Newman,** *Rolls Royce Plc, Derby, Derbyshire, United King-dom,* **Abhilash Patil,** *QuEST Global, Bangalore, India*

Numerical Simulation of Sand Erosion Phenomena on Coated Vane of Low-Pressure Turbine
Technical Publication. GTINDIA2014-8200

Hiroaki Iwashita, Makoto Yamamoto, *Tokyo University of Science, Katushika-ku, Tokyo, Japan*

COMM 3 Combustion, Fuels & Emissions

Point Contact: Abhijit Kushari, *Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India*

3-4
PREMIXED COMBUSTION AND EMISSIONS

India Habitat Centre, Magnolia ***8:30am - 10:30pm***

Session Chair: S. R. Chakravarthy, *Indian Institute of Technology Madras, Chennai, India*
Session Co-Chair: Suresh Lal, *CFEES, Delhi, India*

System Level Performance and Emissions Evaluation of Renewable Fuels for Jet Engines
Technical Publication. GTINDIA2014-8107

Kadambari Lokesh, *Cranfield University, Bedford, Bedfordshire, United Kingdom,* **Vishal Sethi,** *Cranfield University, Bedford-shire, United Kingdom,* **Theoklis Nikolaidis,** *Cranfield University, Cranfield, Bedfordshire,United Kingdom,* **Devaiah Karumbaiah,** *Cranfield University, Bedford, United Kingdom*

Effect of Flow Pulsations in Premixed, Swirl Stabilized Combustor
Technical Publication. GTINDIA2014-8246

Aayush Sharma, Uddalok Sen, *Jadavpur University, Kolkata, West-Bengal, India,* **Pallab S. Mahapatra,** *Indian Institute of Technol-ogy, Madras, Chennai, Tamil Nadu, India,* **Swarnendu Sen, Achintya Mukhopadhyay,** *Jadavpur University, Kolkata, West Bengal, India*

Investigation of Combustion Oscillations of Premixed Dump Combustor Using Time-Resolved Particle Image Velocimetry
Technical Publication. GTINDIA2014-8288

Ramgopal Sampath, *Indian Institute of Technology, Madras, Chennai, India,* **Vikram Ramanan,** *IIT Madras, Chennai, Tamil Nadu, India,* **Satyanarayanan Chakravarthy,** *Indian Institute of Technology Madras, Madras, India*

COMM 4 Heat Transfer

Point Contact: Dr. Prasad BVSSS, *Indian Institute of Technology Madras, Chennai, India*

4-1
GENERAL HEAT TRANSFER

India Habitat Centre, Kadamba ***8:30am - 10:30pm***

Session Chair: Dr. Prasad BVSSS, *Indian Institute of Technology Madras, Chennai, India*

Inverse Heat Transfer Study of a Nonlinear

Straight Porous Fin using Hybrid Optimization
Technical Publication. GTINDIA2014-8101

Ranjan Das, *Indian Institute of Technology Ropar,*

Punjab, India, **Rohit Kumar Singla,** *Indian Institute of Technology Ropar, Rupna-gar, Punjab, India*

Gas Turbine Compartment Ventilation system
Technical Publication. GTINDIA2014-8161

Divya Kothakapu, Srinivas Avishetti, *General Electric, Bangalore, Karnataka, India*

Influence of labyrinth seal leakage on the turbine support cooling
Technical Publication. GTINDIA2014-8172

Alexandr Vinogradov, Renat Badykov, *Samara State Aerospace University, Samara, Russia*

Experimental Investigations on Heat Transfer Enhancement in a Horizontal Tube Using Converging and Diverging Conical Strips
Technical Publication. GTINDIA2014-8287

Naga Sarada Somanchi, Sri Rama Devi Rangisetty, Sudheer Premkumar Bellam, *JNTUH College of Engineering Hyderabad, Hy-derabad, Andhra Pradesh, India,* **Ravi Gugulothu,** *JNTUH College of Engineering, Hyderabad, Andhra Pradesh, India,* **Samuel Bellam,** *TCS, Hyderabad, Andhra Pradesh, India*

COMM 5 Unsteady & Transitional Flows in Turbomachinery

Point Contact: Joseph Mathew, *Indian Institute of Science Bangalore, Bangalore, India*

5-1
UNSTEADY PHENOMENON & ANALYSIS

India Habitat Centre, Casaurina ***8:30am - 10:30pm***

Session Chair: Ravikanth Avancha, *GE Aviation, Bangalore, Karnataka, India*

Experiments on Leading-Edge Induced Separated Shear Layer Under Various Imposed Pressure Gradients
Technical Publication. GTINDIA2014-8177

Subrata Sarkar, *IIT Kanpur, Kanpur, India,* **Kaliyaraju Anand,** *Indian Institute of Technology Kanpur, India,* **Nikhil Thilakan,** *Indian Institute of Technology Kanpur, India*

Unsteady Flow Analysis Around an Elliptic-Bladed Savonius-Style Wind Turbine
Technical Publication. GTINDIA2014-8141

Abhisek Banerjee, *Indian Institute Of Technology Guwahati, Guwahati, India,* **Sukanta Roy,** *IIT Guwahati, North Guwahati, As-sam, India,* **Prasenjit Mukherjee,** *Indian Institute Of Technology, Guwahati, India,* **Ujjwal K. Saha,** *Indian Institute Of Tech-nology, Guwahati, India*

Understanding the Steady and Transient Behavior of the Moderately Loaded High Speed Axial Flow Compressor Stage at Off-Design Conditions
Technical Publication. GTINDIA2014-8144

Dilipkumar Bhanudasji Alone, *CSIR-NAL, Bangalore, India,* **Satish Kumar,** *National Aerospace Labs, Bangalore, Karnataka, India,* **Shobhavathy M . Thimmaiah,** *National Aerospace Laboratories, Bangalore, Karnataka, India,* **Janaki Rami Reddy Mudipalli,** *CSIR-National Aerospace Laboratories, Bangalore, India,* **AM Pradeep,** *IIT Mumbai, Mumbai, India,* **Srinivasan Ramamurthy,** *NCAD CSIR-National Aerospace Laboratories, Bangalore, India,* **Venkat S. Iyengar,** *NAL, Bangalore, India*

Prediction of Gas Turbine Oil Scoop Capture Efficiency
Technical Publication. GTINDIA2014-8329

Santosh Prasad, *GE India Technology Centre, BANGALORE, KARNATAKA, India,* **Pradeep Sangli,** *GE Aviation, John F. Welch Technology Center, Banaglore, Karnataka, India,* **Osman Buyukisik, David Pugh,** *GE Aviation, West Chester, OH, United States*

COMM 6 Structure & Dynamics

Point Contact: Baskaran Bhuvaraghan, *GEITC, Bangalore, Karnataka, India*

6-1
FATIGUE AND FRACTURE

India Habitat Centre, Maple ***8:30am - 10:30pm***

Session Chair: Asim Ghosal, *General Electric, Energy, Bangalore, Karnataka, India*

Session Co-Chair: Seerangan Murugesan, *General Electric, Bangalore, India*

High Cycle Fatigue Life Assessment of Compressor Blades Under Multi-Axial Fatigue Mode
Technical Publication. GTINDIA2014-8222

Sri Shanti Potluri, *Gas Turbine Research Establishment, Bangalore, Karnataka, India,* **Ananda Mohan BS, Isai Thamizh R, Srinivasa Rao Potu, Ananda Rao Patnaik BV,** *Gas Turbine Research Establishment, Bengaluru, India*

Residual Life Estimation of Axial Compressor Blade of a Turbo-Shaft Engine
Technical Publication. GTINDIA2014-8241

Selwyn Anbarasan, Essaki Muthu, P Udayanan, Girish K Degaonkar, Hardik Roy, *Hindustan Aeronautics Limited, Bangalore, Karnataka, India*

Validation of LCF Life of Turbine Rotor Assembly of a Turbo-shaft Engine through Cyclic Spin Test
Technical Publication. GTINDIA2014-8245

Hardik Roy, Essaki Muthu, P Udayanan, Girish K Degaonkar, Selwyn Anbarasan, *Hindustan Aeronautics Limited, Bangalore, Kar-nataka, India*

Design Modification to Enhance Fatigue Life of an Aero-Engine Heat Shield
Technical Publication. GTINDIA2014-8136

AMAR SINGH, JOSEPH SHIBU. K, *Hindustan Aeronautics Limited (HAL), Bangalore, karnataka, India*

COMM 13 Student Posters

Point Contact: Bhaskar Roy, *Indian Institute of Technology Bombay, Mumbai, Select State/Province, India*

13-2
STUDENTS POSTERS DISPLAY (CONTINUED FROM PREVIOUS DAY...)

India Habitat Centre, Adjacent to Stein Auditorium ***8:30am - 4:30pm***

COMM 14 Scholar Lectures

Point Contact: Subrata Sarkar, *IIT Kanpur, Kanpur, India*

14-4
VIBRATION OF A BLADED ROTOR: MISTUNING AND FRICTION DAMPING (BY DR ALOK SINHA)

India Habitat Centre, Amaltas ***10:45am - 11:45pm***

Session Chair: Joseph Machnaim, *GE Global Research, Bangalore, India*

Vibration of a Bladed Rotor: Mistuning and Friction Damping
Technical Presentation Only. GTINDIA2014-8389

Alok Sinha, *The Pennsylvania State University, University Park, PA,United States*

COMM 14 Scholar Lectures

Point Contact: Subrata Sarkar, *IIT Kanpur, Kanpur, India*

14-5
PREDICTION, ANALYSIS AND OPTIMIZATION OF FILM COOLING FLOWS (BY DR SUMANTA ACHARYA)

India Habitat Centre, Stein Auditorium ***10:45am - 11:45pm***

Session Chair: Subrata Sarkar, *IIT Kanpur, Kanpur, India*

Prediction, Analysis and Optimization of Film Cooling Flows
Technical Presentation Only. GTINDIA2014-8390

Sumanta Acharya, *Turbine Innovation & Energy Research (TIER) Center Louisiana State University, Baton Rouge, LA,United States*

COMM 1 Compressors

Point Contact: AM Pradeep, *IIT Mumbai, Mumbai, India*

1-1
AXIAL COMPRESSORS -I

India Habitat Centre, Amaltas ***11:45am - 1:45pm***

Session Chair: Umesh Garg, *General Electric, Bangalore, India*
Session Co-Chair: Shraman Goswami, *Honeywell Technology Solutions, Bangalore, Karnataka, India*
Numerical Studies on the Effect of Gurney Flap on Aerodynamic Performance and Stall Margin of a Transonic Axial Compressor Rotor

Technical Publication. GTINDIA2014-8130

Quamber Husain Nagpurwala, *M S Ramaiah University of Applied Sciences, Bangalore, Karnataka, India,* **Mudassir Ahmed M.R.,** *Safran Engineering Services, Bangalore, Karnataka, India,* **Subbaramu S.,** *M S Ramaiah University of Applied Sciences, Bangalore, Karnataka, India*

Numerically Understanding the Steady State Response of Single Stage Transonic Axial Flow Compressor to Axial Locations of Step for Stepped Tip Clearance
Technical Publication. GTINDIA2014-8147

Hardik Kishorekumar Vashi, *Mechanical Enginering Department Faculty of Technology and Engineering M S University Baroda, Vadodara, India,* **Dilipkumar Bhanudasji Alone,** *CSIR-NAL, Bangalore, India,* **Harish S Choksi,** *Mechnaical Enginnering Department MS University Baroda, Vadodara, India*

Study of Simulated Distortion Waves in an Axial Flow Fan
Technical Publication. GTINDIA2014-8219

Bhaskar Roy, *Indian Institute of Technology Bombay, Mumbai, Select State/Province, India,* **Prashant Kumar,** *Cemilac, DRDO, Bangalore, India*

COMM 2 Turbines

Point Contact: Subhrajit Dey, *GE Global Research, Bangalore, India*

2-2
TURBINE SYSTEM DESIGN

India Habitat Centre, Stein Auditorium ***11:45am - 1:45pm***

Session Chair: Deoras Prabhdharwadkar, *GE India Technology Center Pvt. Ltd., Bangalore, India*

Effect of Manufacturing Tolerances on the Turbine Blades
Technical Publication. GTINDIA2014-8253

Daria Kolmakova, *Oleg Baturin, Grigorii Popov, Samara State Aerospace University, Samara, Russia*

Parametric Modeling System for Cooling Turbine Blade Based on Feature Design
Technical Publication. GTINDIA2014-8363

Rongqiao Wang, Fei Ma, Dianyin Hu, *Beihang University, Beijing, Beijing,China,* **Jun Song,** *McGill University, Montreal, QC, Canada*

The Research of Application of Surrogate Models in the Reliability Evaluation of Turbine Disc?s Life-Span
Technical Publication. GTINDIA2014-8371

Rongqiao Wang, Hanxi Li, Dianyin Hu, *Beihang University, Beijing, Beijing, China,* **Jun Song,** *McGill University, Montreal, QC, Canada*

COMM 3 Combustion, Fuels & Emissions

Point Contact: Abhijit Kushari, *Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India*

3-5
COMPUTATIONAL COMBUSTION AND MODELLING -I

India Habitat Centre, Magnolia ***11:45am - 1:45pm***

Session Chair: D. Uma Maheshwar, *GE Aviation, Bangalore, India*

Modeling of Particle Wall Interaction and Film Transport using Eulerian Wall Film Model
Technical Publication. GTINDIA2014-8230

Rahul Ingle, Ravi Yadav, Hemant Punekar, *ANSYS Fluent India Pvt Ltd, Pune, Maharashtra, India,* **Jing Cao,** *ANSYS UK, Sheffield, Sheffield, United Kingdom*

Characterization of Mixing and Flow Properties From Numerical Simulation of Cold Flow in Non-Premixed Combustor
Technical Publication. GTINDIA2014-8306

Sirshendu Mondal, Achintya Mukhopadhyay, Swarnendu Sen, *Jadavpur University, KOLKATA, West Bengal, India,* **Wolfgang Polifke,** *Technische Univ/ munchen, Mnchen D 8574 8, Germany*

Analysis of Different Radiation Models in a Swirl Stabilized Combustor
Technical Publication. GTINDIA2014-8318

Aayush Sharma, Chandrachur Bhattacharya, Swarnendu Sen, Achintya Mukhopadhyay, Amitava Datta, *Jadavpur University, Kol-kata, West-Bengal, India*

COMM 6 Structure & Dynamics

Point Contact: Baskaran Bhuvaraghan, *GEITC, Bangalore, Karnataka, India*

6-4
DYNAMICS -I

India Habitat Centre, Maple ***11:45am - 1:45pm***

Session Chair: Dr. Ramesh TC, *QuEST Global Engineering Private Limited, Bangalore, India*

Session Co-Chair: SAI RAJU IPPILI, *GEITC, Bangalore, Karnataka, India*
Large Amplitude Free Vibration Analysis of Axially Functionally Graded Plates
Technical Publication. GTINDIA2014-8267

Saurabh Kumar, Haraprasad Roy, *National Institute of Technology, Rourkela, Rourkela, Odisha,India,* **Anirban Mitra,** *Jadavpur Uni-versity, Kolkata, West Bengal, India*

An Investigation in to the Rotordynamics Behavior of Mechanically Coupled Turbo Expander Technical Publication. GTINDIA2014-8256

Balaji Kannan, *Honeywell Technology Solutions Bangalore, Bangalore, Karnataka, India,* **Krishnamurthy Vaidyanathan, Kiran Pi-thamber,** *Honeywell Technology Solutions - Bangalore, KARNATAKA, India,* **Suvendu Mahapatra,** *Honeywell Technolo-gy Solution Lab Pvt Ltd, Bangalore, India*

A Balanced IIRS Model for Investigating the Dynamics of Damped Rotor Bearing System Technical Publication. GTINDIA2014-8279

Saurabh Chandraker, Haraprasad Roy, *National Institute of Technology, Rourkela, Rourkela, Odisha, India*

COMM 8 GT Cycle Innovations, Renewable Applications

Point Contact: Dhinagaran Ramachandran, *LM Wind Power Technologies (India) Pvt. Ltd, Bangalore, India*

8-3
RENEWABLE ENERGY

India Habitat Centre, Kadamba ***11:45am - 1:45pm***

Session Chair: Jitendra Bijlani, *LM Wind Power, Bangalore, India*

Intelligent Biogas Fuelled Distributed Energy Conversion Technologies: Overview of a Pilot Study in Norway
Technical Publication. GTINDIA2014-8231

Mohsen Assadi, Center *for Sustainable Energy Solutions, University of Stavanger, Stavanger, Norway,* **Mohammad Mansouri Majoumerd,** *University of Stavanger, Stavanger, Norway,* **Kuntal Jana, Sudipta De,** *Jadavpur University, kolkata, West Bengal, India*

Aerodynamic Performance Evaluation of a Novel Savonius-Style Wind Turbine Under an Oriented Jet
Technical Publication. GTINDIA2014-8152

Sukanta Roy, IIT *Guwahati, North Guwahati, Assam, India,* **Prasenjit Mukherjee,** *Indian Institute Of Technology Guwahati, Gu-wahati, India,* **Ujjwal K. Saha,** *Indian Institute Of Technology, Guwahati, India*

Effect of Guide Vane Angle on Wells Turbine Performance
Technical Publication. GTINDIA2014-8183

Paresh Halder, *IIT Madras, Chennai, Tamil Nadu, Tamil Nadu, India,* **Abdus Samad,** *IIT Madras, chennai, India*

COMM 11 Multidisciplinary Design Approaches, Optimization and Uncertainty Quantification

Point Contact: Sanjay Mittal, *Indian Institute of Technology Kanpur, Kanpur, India*

11-1
OPTIMIZATION AND UNCERTAINTY QUANTIFICATION

India Habitat Centre, Casaurina ***11:45am - 1:45pm***

Session Chair: Vinay Ramanath, *GE India Technology Center, Bangalore, India*

Optimization of Compressor Blade Geometry for Efficiency and Pressure Ratio Under Strength Constraint
Technical Publication. GTINDIA2014-8132

Leonid Shabliy, *Samara State Aerospace University, Samara, Russia,* **Aleksandr Cherniaev,** *JSC "CADFEM-CIS", Samara, Russia*

Design Optimization of Wind Turbine Using Fluid Structural Interaction Analysis and Genetic Algorithm
Technical Publication. GTINDIA2014-8296

Ganesh Ram R K, Akshan Paresh Mehta, Karthikeyan Ramanujam, Kalaichelvi Venkatesan, *BITS PILANI DUBAI CAMPUS, Dubai, Dubai, United Arab Emir.*

Performance Enhancement of an Electric Submersible Pump
Technical Publication. GTINDIA2014-8133

Rohit Adhav, Abdus Samad, *IIT Madras, Chennai, TN, India,* **Frank Kenyery,** *Univ Simon Bolivar, Caracas 1080a, Venezuela*

COMM 3 Combustion, Fuels & Emissions

Point Contact: Abhijit Kushari, *Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh, India*

3-1
ATOMISATION AND SPRAYS

India Habitat Centre, Amaltas ***2:15pm - 4:30pm***

Session Chair: N. Muthuveerappann, *Gas Turbine Research Establishment, Bangalore, India*

Session Co-Chair: G. Sivaramakrishna, *GTRE, Bangalore, India*

Axial and Radial Variation of Spray Characteristics of a Small-Scale Simplex Atomizer
Technical Publication. GTINDIA2014-8148

Muthuselvan G, Muralidhara HS, *CSIR-National Aerospace Laboratories, Bangalore, India,* **Anurag Pradhan, Chaithra P, Prarthana P, Mohammed Sameer,** *VTU, Bangalore, India,* **Vinod Kumar Vyas,** *CSIR-National Aerospace Laboratories, Bangalore, India,* **Jey-aseelan A.R, Rajeshwari Natarajan,** *CSIR -National Aerospace Laboratories, Bangalore, India*

Experimental Investigation of a Hybrid Atomizer?s Spray Characteristics in Variable Flow Condition by Using Alcohol Blended Diesel Fuel
Technical Publication. GTINDIA2014-8260

Amlan Garai, Sudeepta Mondal, Swarnendu Sen, Achintya Mukhopadhyay, *Jadavpur University, kolkata, West Bengal, India*

Characterization of unconfined isothermal hollow cone spray ? annular swirling jet interaction
Technical Publication. GTINDIA2014-8366

Dilip Sanadi, *IISc, bangalore, Select State/Province, India,* **Saptarshi Basu,** *Indian Institute of Science, Bangalore, Karnataka, India*

Effect of Flow Pulsation on Transport and Secondary Atomization of a Polydisperse Evaporating Spray
Technical Publication. GTINDIA2014-8250

Pallab S. Mahapatra, *Indian Institute of Technology, Madras, Chennai, Tamil Nadu, India,* **Dr. Mahesh V Panchagnula,** *Indian Insti-tute of Technology Madras, Chennai, India,* **Achintya Mukhopadhyay,** *Jadavpur University, Kolkata, West Bengal, India*

3-6
COMPUTATIONAL COMBUSTION AND MODELLING -II

India Habitat Centre, Magnolia ***2:15pm - 4:30pm***

Session Chair: Anjan Ray, *Indian Institute of Technology Delhi, New Delhi, India*

Numerical Simulation of Inclined Injection of Polydisperse Polykinetic Spray in a Crossflow using Quadrature Method of Moments
Technical Publication. GTINDIA2014-8209

Sudeepta Mondal, Achintya Mukhopadhyay, *Jadavpur University, Kolkata, West Bengal, India*

Numerical Investigation of Soot Formation in

Turbulent Diffusion Flames using Moss-Brookes Model
Technical Publication. GTINDIA2014-8233

Mannedhar Reddy, *Indian Institute of Technology Kanpur, Kanpur, Uttar Pradesh,India,* **Ashoke De,** *IIT Kanpur, Kanpur, India*

Numerical Investigation of Pilot-Stabilized Turbulent Flames Using Steady Flamelet Model
Technical Publication. GTINDIA2014-8234

Akshay Dongre, *Indian Institute of Technology Kanpur, Uttar Pradesh, India,* **Ashoke De,** *IIT Kanpur, Kanpur, India*

Turbulence-Transport-Chemistry Interaction in Statistically Planar Premixed Flames and Ignition Kernels in Nearly Isotropic Tur-bulence
Technical Publication. GTINDIA2014-8340

Harshavardhana A. U., Swetaprovo Chaudhuri, K N Lakshmisha, *Indian Institute of Science, Bangalore, India*

Assessment of CFD Approaches for Next-Generation Combustor Design
Technical Publication. GTINDIA2014-8361

Kumud Ajmani, *CFD Nexus, LLC, Avon, OH, United States,* **Hukam Mongia,** *Purdue University, West Lafayette, IN,United States***, Phil Lee,** *Woodward FST Inc., Zeeland, MI, United States*

COMM 4 Heat Transfer

Point Contact: Dr. Prasad BVSSS, *Indian Institute of Technology Madras, Chennai, India*

4-2

INTERNAL COOLING

India Habitat Centre, Stein Auditorium ***2:15pm - 4:30pm***

Numerical Study on Heat Transfer and Fluid Flow in Pin Fin-Dimple Channels With Fillet on Dimple Edge
Technical Publication. GTINDIA2014-8103

Muralikrishnan G M, *College of Engineering Adoor, IHRD Govt. of Kerala (Affiliated to CUSAT), Ernakulam, Kerala,India,* **Abhijith A, Madhu A K,** *College of Engineering Adoor, IHRD Govt. of Kerala (Affiliated to CUSAT), Pathanamthitta, Kerala,India*

An Internal Heat Transfer Study in a Cooled Nozzle Guide Vane of a Linear Cascade
Technical Publication. GTINDIA2014-8191

ARUN KUMAR PUJARI, *IIT MADRAS, CHENNAI, India,* **Dr. Prasad BVSSS, Dr. Sitaram N.,** *Indian Institute of Technology Madras, Chennai, India*

Heat Transfer and Flow Studies of Different Cooling Configurations for Gas Turbine Rotor Blade
Technical Publication. GTINDIA2014-8214

Batchu Suresh, *Gas Turbine Research Establishment, Bangalore, India,* **Ainapur Brijesh,** *Siddaganga Institute of Technology, Tu-mukur, Karnataka, India,* **V. Kesavan, S. Kishore Kumar,** *Gas Turbine Research Establishment, Bangalore,India*

Computational Study Of Flow And Heat Transfer In Matrix Cooling Channels
Technical Publication. GTINDIA2014-8252
Sivasankara Reddy R., *Gas Turbine Research Establishment, Bangalore,India,* **Siddappa P.G.,** *Siddaganga Institute of Technology ,VTU, Tumkur, India,* **V. Kesavan, S. Kishore Kumar,** *Gas Turbine Research Establishment, Bangalore, India*

Transient Thermal Modeling of a Gas Turbine Rotor System
Technical Publication. GTINDIA2014-8263

Athul Gopinath, *Aero Engine Research and Design Centre, Bangalore, Karnataka, India,* **Narayana Rao K V L,** *Hindustan Aero-nautics Limited, Bangalore,India,* **Dani Davis, Vinod Kumar V. J., Devathathan Mookaia, Rajeev Kumar Upadhyay,** *Aero Engine Re-search and Design Centre, Bangalore, Karnataka, India*

COMM 6 Structure & Dynamics

Point Contact: Baskaran Bhuvaraghan, *GEITC, Bangalore, Karnataka, India*

6-5
DYNAMICS -II

India Habitat Centre, Maple ***2:15pm - 4:30pm***

Session Chair: Dr. Ramesh TC, *QuEST Global Engineering Private Limited, Bangalore, India*
Session Co-Chair: SAI RAJU IPPILI, *GEITC, Bangalore, Karnataka, India*

Simulation of Accessory Drives Bevel Gears Dynamic Conditions
Technical Publication. GTINDIA2014-8139

Egor Kozharinov, Jury Temis, *Central Institute of Aviation Motors, Moscow, Russia*

Yield Surface Investigation of Alloys During Model Disk Spin Tests
Technical Publication. GTINDIA2014-8119

Anton Servetnik, Evgeny Kuzmin, *Central Institute of Aviation Motors, Moscow, Russia*

Structural Assessment of Torque Converter at Operating Conditions: A Numerical Study
Technical Publication. GTINDIA2014-8372

Subbaramu S, Vinod K. Banthia, *M. S. Ramaiah University of Applied Sciences, Bengaluru,India,* **S. M. Vijay Kumar,** *Mercedes-Benz Research and Development Pvt. Ltd., Bangalore, Karnataka,India*

COMM 11 Multidisciplinary Design Approaches, Optimization and Uncertainty Quantification

Point Contact: Dr. Sanjay Mittal, *Indian Institute of Technology Kanpur, Kanpur, India*

4-2
INTERNAL COOLING

India Habitat Centre, Casaurina ***2:15pm - 4:30pm***

Session Chair: Jayavenkateshwaran K, *Honeywell Technology Solutions, Bangalore, India*

Design and Analysis of Crown Profile of Fan Rotor Blade Roots for Gas Turbines
Technical Publication. GTINDIA2014-8180

Gaurav R Dave, *Tata Technologies, Pune, Maharashtra, India,* **Ramachandra Dr Krishnaswamy,** *R.V.College of Engineering, Ban-galore, Karnataka, India,* **Lohith MC,** *Indian Institute of Technology, Chennai, Tamil Nadu, India,* **Krishna Kulkarni,** *SPST India Pvt. Ltd., Pithampur, India,* **Nikhil Jain,** *Flexing It, New Delhi, India*

Account The Mutual Influence Of The Simulation Components Of GTE
Technical Publication. GTINDIA2014-8211

Alexander Krivcov, Leonid Shabliy, Oleg Baturin, *Samara State Aerospace University, Samara, Russia*

Stress Analysis and Strength Evaluation of Scarf Adhesive Joints
Technical Publication. GTINDIA2014-8347

Majahar Sayyad, *Vidya prathishthan's college of engineering baramati, Baramati, India,* **Hanumant Popat Barote,** *VPCOE, Baramati, Baramati, Maharashtra, India*

Research on Surrogate Model Based on Local Radial Point Interpolation Method
Technical Publication. GTINDIA2014-8360

Rongqiao Wang, Jianxing Mao, Dianyin Hu, Da Li, *Beihang University, Beijing, China*, **Jun Song,** *McGill University, Montre-al, QC, Canada*

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May 18, 2015

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August 10, 2015

Submission of Revised Paper for Review (if required)
August 17, 2015

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(if applicable)
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August 26, 2015

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