

## TECHNICAL REPORTS (TR) 2017-18

3D MHD simulation for Pb-Li flows in LLCB TBM using ANSYS FLUENT

ANITA PATEL, S. RANJITHKUMAR, R. BHATTACHARYA and P. SATYAMURTHY

IPR/TR-428/2017 (April 2017)

Adsorption Test Facility for Characterizing Adsorbents at a Cryogenic Temperature Down to 4.5 K

J. MISHRA, J. AGARWAL, P. NAYAK, P. PANCHAL, S. MUKHERJEE, S. KASTHURIENGAN and R. GANGRADEY

IPR/TR-429/2017 (April 2017)

Report on Demonstration of Different EPICS extension for control and Monitoring of Power Supply

ARNAB DAS GUPTA, HITESH K. GULATI, AMIT K. SRIVASTAVA, S. SUNIL and Z. KHAN

IPR/TR-430/2017 (April 2017)

Implementation of an OROCOS based Real-Time Equipment Controller for Remote Maintenance of Tokamaks

NAVEEN RASTOGI, PRAMIT DUTTA and KRISHAN KUMAR GOTEWAL

IPR/TR-431/2017 (May 2017)

Development of Pneumatic Punch and Cutter for Extruder Type Pellet Injector Application

PARESH PANCHAL, SAMIRAN MUKHERJEE and RANJANA GANGRADEY

IPR/TR-432/2017 (May 2017)

A Theoretical and Experimental Hydrodynamic Analysis of Molten PbLi for Round Liquid Jet

ARVIND KUMAR, V. C. CHAUDHARI, GAUTAM PULUGUNDLA and SERGEY SMOLENTSEV

IPR/TR-433/2017 (June 2017)

Design and Assessment of Horizontal Access Module (Ham) for Laser Interferometer Gravitational-Wave Observatory (Ligo)-India Project

RAKESH KUMAR, MANOJ KUMAR GUPTA and ZIAUDDIN KHAN

IPR/TR-434/2017 (June 2017)

Calibration of Michelson Interferometer Diagnostics and Measurements with Monochromatic Source

ABHISHEK SINHA, S. K. PATHAK, STEFAN SCHMUCK AND JOHN FESSEY

IPR/TR-435/2017 (July 2017)

Advanced Fabrication Techniques and its Application in Strategic and Nuclear Domain: An Overview

GAUTAM R VADOLIA, K P SINGH, BHARAT DOSHI and MANOJ KUMAR GUPTA

IPR/TR-436/2017 (July 2017)

Comparison of ANISN and ATTILA Codes Neutronics Results for a Simplified Model of US DCLL Blanket

DEEPAK AGGARWAL and CHANDAN DANANI

IPR/TR-437/2017 (July 2017)

Stokes Parameters of Beam Reflected from Optically Absorbing Medium

ASHA ADHIYA, RAJWINDER KAUR and PRAMILA

IPR/TR-438/2017 (July 2017)

Design and Development of 140 GHz D-Band Phase Locked Heterodyne Interferometer System for Real Time Density Measurement

UMESH NAGORA, ABHISHEK SINHA, S. K. PATHAK, PHILIP IVANOV, R. L. TANNA, K. A. JADEJA, K. M. PATEL and J. GOSH

IPR/TR-439/2017 (August 2017)

Technical Report on Automation in calorimetric pulse power measurement of ECRH Gyrotron system

Harshida Patel, Gunjan Patel, Shah Moksha and B. K. Shukla

IPR/TR-440/2017 (August 2017)

Thermo-Mechanical Analysis for Basic Symmetric Chamber (BSC)

MANOJ KUMAR GUPTA, RAKESH KUMAR and ZIAUDDIN KHAN

IPR/TR-441/2017 (August 2017)

Numerical Modelling for the Effective Thermal Properties of Lithium Meta-Titanate Pebble Beds

MAULIK PANCHAL and PARITOSH CHAUDHURI

IPR/TR-442/2017 (August 2017)

USB Web Camera Based Feedback Control Technique of Aligning a Laser Beam

S. SUNIL, AMIT K SRIVASTAVA and ZIAUDDIN KHAN

IPR/TR-443/2017 (August 2017)

Frequency Sweep Linearisation of Ka Band Microwave Source for the FMCW Reflectometer Diagnostic

JJ.U. BUCH, E. V. PRAVEENLAL and S. K. PATHAK

IPR/TR-444/2017 (August 2017)

#### TR-445

Data-Acquisition & Interlock System Design for Corrosion Experiments of Indian RAFMS with Flowing Pb-Li

A. SARASWAT, S. VERMA, S. GUPTA, A. SARADA SREE and E. RAJENDRA KUMAR

IPR/TR-446/2017 (October 2017)

Design and Analysis of Circular Waveguide Termination for SYMPLE

JITENDRA KUMAR, ZEESHAN, RAHUL JAISWAL, ARPIT BARANWAL, RAJ SINGH and ANITHA V. P.

IPR/TR-447/2017 (October 2017)

3D Magneto-hydrodynamic numerical analysis for Pb-Li flow in a test mock up with electrically coupled flow channels and complex manifold

ANITA PATEL, R. BHATTACHARYAY, P. SATYAMURTHY, P. K. SWAIN and S. RANJITHKUMAR

IPR/TR-448/2017 (October 2017)

Transient Thermal Analysis of Cathode for High Density Multi-Filamentary Plasma Source of LVPD

PROSENJIT SANTRA, AMULYA K. SANYASI, VIVEK PATEL, NISARG RAVAL, AKASH PATEL, PINAKIN PATEL, PRAMIT DUTTA, PRABHAKAR SRIVASTAV, P. K. SRIVASTAVA, R. SUGANDHI, MANOJ K. GUPTA, BHARATI DOSHI and L. M. AWASHTI

IPR/TR-449/2017 (October 2017)

Jitter Minimization in Triggering Multiple Solid State Devices using Fiber Optical Cables

BHAVESH KADIA, V. S. KIRAN MEDURI, Y. S. S. SRINIVAS and S. V. KULKARNI

IPR/TR-450/2017 (November 2017)

Design Aspects of Two Stub Matching Network for the Up-gradation of Aditya ICRH System for Fast Wave and Ion Bernstein Wave Heating Experiments

SUNIL KUMAR, S. V. KULKARNI and HIGH POWER ICRH SYSTEMS DIVISION

IPR/TR-451/2017 (December 2017)

Proposed RFID (Radio Frequency Identification) based Inventory/Asset Management Solution for IPR

MANISHA BHANDARKAR, PANKAJ SRIVASTAVA, L. M. AWASTHI, B. R. DOSHI, SANJAY PANDYA, YOGESH DADEECH, MUKESH C. JHA, R. RATHOD, KIRAN AMBULKAR, BRIJ K. SHUKLA, KUMUDINI TAHILIANI, AGRAJIT G. GAHALAUT, CHHAYA CHAVDA, DILIP C. RAVAL, VINAY KUMAR, V. PRAHLAD, FALGUNI SHAH, BKBS RAO and H. S. CHAMUNDE

IPR/TR-452/2017 (December 2017)

Real-time Control of Gas feed Pulses to Reduce Wall Loading of Fuel Gas in ADITYA Upgrade Tokamak

PRAVEENLAL EDAPPALA, MINSHA SHAH, RACHANA RAJPAL, K. A. JADEJA, R. L. TANNA and J. GHOSH

IPR/TR-453/2017 (DECEMBER, 2017)

Trigger and Timing Control System using FPGA and MicroBlaze Soft Processor for Plasma Operations of ADITYA-U Tokamak

MINSHA SHAH, PRAVEENLAL EDAPPALA, VISMAY RAULJI, RACHANA RAJPAL, R. L. TANNA, C. N. GUPTA and J. GHOSH

IPR/TR-454/2017 (December 2017)

Design and Development of TM Mode Launcher for Circular Waveguide for SYMPLE  
ARPIT BARANWAL, RAHUL JAISWAL, SHREEKANT PATEL, JITENDRA KUMAR, RAJ SINGH AND  
ANITHA V. P.

IPR/TR-455/2018 (January 2018)

Application of 2D Digital Image Correlation (DIC) Technique for Strain measurement during tensile test  
KEDAR BHOPE, MAYUR MEHTA, JIGNESH CHAUHAN, HARDIK TAILOR and SAMIR KHIRWADKAR  
IPR/TR-456/2018 (January 2018)

Assembly and Characterization of Fourier Transform Michelson Interferometer Diagnostic  
ABHISHEK SINHA, S. K. PATHAK, JOHN FESSEY and STEFAN SCHMUCK  
IPR/TR-457/2018 (January 2018)

Design and Development of Millimeter Wave Interferometer Circuit for Real-Time Measurement of Plasma  
Density  
PRAVEEN KUMAR ATREY, DHAVAL PUJARA, SUBROTO MUKHERJEE, UMESH NAGORA,  
PRAVEENLAL EDAPPALA, PRAVEENA KUMARI and RACHANA RAJPAL  
IPR/TR-458/2018 (January 2018)

Study on Interactions of Inter-Winding Capacitances of Multi-Secondary Transformer and their Effect on the  
Performance of PSM Based High Voltage Power Supply  
L. N. GUPTA, S. V. KULKARNI, N. P. SINGH, PARESH. J. PATEL, DIPAL THAKKAR, SUMOD C. B. and  
U. K. BARUAH  
IPR/TR-459/2018 (January 2018)

Thermo-Mechanical Analysis of Horizontal Access Module (HAM) Chamber  
MANOJ KUMAR GUPTA, RAKESH KUMAR and ZIAUDDIN KHAN  
IPR/TR-460/2018 (January 2018)

Wireless and Wired Data Communication for High Heat Flux Test Facility (HHFTF)  
KALPESH GALODIYA, SUNIL BELSARE, SAMIR KHIRWADKAR, TUSHAR PATEL and PRAKASH  
MOKARIA  
IPR/TR-461/2018 (January 2018)

Determination of Mueller Matrix of a Hollow Rooftop Reflector  
ASHA ADHIYA and RAJWINDER KAUR  
IPR/TR-462/2018 (January 2018)

Design Basis of First Wall Helium Cooling System for LLCB TBM  
B. K. YADAV, A. GANDHI, S. RAO, P. CHAUDHURI and E. R. KUMAR  
IPR/TR-463/2018 (February 2018)

Development of Pump Performance Test Loop for Feasibility Study of Operation Similar to LLCS loop for IN-  
LLCB TBM  
MRITUNJAY KUMAR, ANKUR JAISWAL, ABHISHEK SARASWAT and R. BHATTACHARYAY  
IPR/TR-464/2018 (February 2018)

Experimental plan for testing TBM FW mock-up of IPR in Helium Loop Karlsruhe (HELOKA), at KIT, Germany  
B. K. YADAV, S. RANJITH KUMAR, A. SARASWAT, S. RAO, S. GUPTA, A. N. MISTRY, P. CHAUDHURI  
AND E. R. KUMAR  
IPR/TR-465/2018 (February 2018)

NDOT-1D (v1.2): A MATLAB code for preparation & execution of MCNP input files for 1-D radial model of  
fusion reactors  
P. J. BHUYAN, B. J. SAIKIA and C. DANANI  
IPR/TR-466/2018 (February 2018)

Development of Machine Vision Acquisition System for Tokamak in Visible Spectrum  
VISHNU CHAUDHARI, MANOJ KUMAR and AJAI KUMAR  
IPR/TR-467/2018 (February 2018)

A Code for Magnetic Field Due to Arbitrary Electromagnets (CAE v1.0)  
DIVYANG R. PRAJAPATI and GATTU RAMESH BABU

IPR/TR-468/2018 (February 2018)

Implementation of PLC Based Quench Fault Monitoring and Control Mechanism for TFPS

AKHILESH KUMAR SINGH, DINESH KUMAR SHARMA, MURTUZA M. VORA, AMIT OJHA and SUPRIYA A. NAIR

IPR/TR-469/2018 (March 2018)

Heat treatment and Metallurgical Characterization of Nb<sub>3</sub>Sn/Cu KODA Strands

YOGENDRA SINGH, PIYUSH RAJ, ARUN PANCHAL, CHIRAG DODIYA, SUBRAT KUMAR DAS, NITISH KUMAR, ANEES BANO, ANANYA KUNDU, BHADRESH PARGHI, DHAVAL BHAVSAR, DEVEN KANABAR, AZAD MAKWANA, MAHESH GHATE and UPENDRA PRASAD

IPR/TR-470/2018 (March 2018)

Preliminary Design Calculations of First Wall Helium Cooling System for LLCB TBM

B. K. YADAV, A. GANDHI, P. CHAUDHURI and E. R. KUMAR

IPR/TR-471/2018 (March 2018)

Electromagnetic Analysis of ITER Diverter for MD Scenario

VINAY MENON, DEEPU KRISHNAN and SAMEER KHIRWADKAR

IPR/TR-472/2018 (March 2018)

Engineering Design of Rail assembly for Movement of Test Section of Pb-Li MHD Loop

MRITUNJAY KUMAR, ANKUR JAISWAL and R. BHATTACHARYAY

IPR/TR-473/2018 (March 2018)