IAEA-TM Agenda

May 30th

Morning Session
Session 1. Inverse Problems and Equilibrium Reconstruction

8:15 – 8:45 am  Check-in and Registration
8:45 – 8:50 am  Welcome
8:50 – 9:20 am  Cianciosa (Invited): Uncertainty Analysis in 3D Equilibrium Reconstruction
9:20 – 9:45 am  Xiao: 2D magnetic field diagnosed by Laser-driven Ion-beam Trace Probe
9:45 – 10:10 am Faugeras: Assimilation of polarimetry Stokes vector measurements in tokamak free-boundary equilibrium reconstruction with application to ITER
10:10 – 10:35 am Howell: Development of a Non-Parametric Gaussian Process Model in V3FIT

10:35 – 10:55 am  Coffee Break

10:55 – 11:20 am  Skvara: Robust Bayesian linear regression for Tokamak plasma boundary estimation
11:20 – 11:45 am  Lupelli: Recent updates in Machine-Agnostic EFIT++ Free Boundary Equilibrium Code
11:45 – 12:10 am  Stagner: Determining the Population of Individual Fast-ion Orbits using Generalized Diagnostic Weight Functions

12:10 pm – 1:00 pm Lunch Break (Provided at site)

Afternoon Session
Session 2. Inverse Problems and Equilibrium Reconstruction Probability theory and statistical analysis/UQ

1:00 – 1:30 pm  Chilenski (Invited): Bayesian inference of impurity transport coefficient profiles
1:30 – 1:55 pm  Stankunas: Accurate Determination of Radiated Power Density Profile Using Bolometer Data for DT Baseline Scenario at JET
1:55 – 2:20 pm  Ferreira: Full-pulse tomographic reconstruction with deep neural networks
2:20 – 2:45 pm  Wang: Bayesian soft X-ray Tomography on Tore Supra and WEST
2:45 – 3:15 pm  Discussion for Inverse Problems & Equilibrium Reconstruction

3:15 – 3:35 pm  Coffee Break
May 31st

Morning Session
Session 3. Model Selection Validation and Verification

8:00 – 8:25 am  **Ernst:** Multichannel Validation of Gyrokinetic Simulations using a Synthetic Diagnostic for Doppler Backscattering based on Full-Wave Simulations

8:25 – 8:50 am  **Rodriguez – Fernandez:** Validation of Quasilinear Transport Codes Via Machine Learning Strategies

8:50 – 9:15 am  **Howard:** Validating Simulations of Multi-Scale Plasma Turbulence in ITER-Relevant, Alcator C-Mod Plasmas

9:15 – 9:40 am  **Vaezi:** An Improved Approach to Uncertainty Quantification for Plasma Turbulence Validation Studies

9:40 – 10:05 am  **Michoski:** Global Surrogates for the Upshift of the Critical Threshold in the Gradient for ITG Driven Turbulence

10:05 – 10:25 am  **Coffee Break**

10:25 – 10:50 am  **Jacobson:** Validation of MHD Models using MST RFP Plasmas

10:50 – 11:15 am  **Reusch:** Model Validation for Quantitative X-ray Measurements

11:15 – 11:40 am  **Mazon:** GEM tomographic measurements for WEST and validation strategies

11:40 – 12:10 pm  Discussion for Model Selection Validation and Verification

12:10 – 1:00 pm  **Lunch Break (Provided at site)**

Afternoon Session:  **Session 4. Disruption prediction and pattern recognition**

1:00 – 1:30 pm  **Ratta (Invited):** AUG-JET cross-tokamak disruption predictor

1:30 – 1:55 pm  **Kates-Harbeck:** Disruption Forecasting in Tokamak Fusion Plasmas using Deep Recurrent Neural Networks

1:55 – 2:20 pm  **Berkery:** Disruption event characterization and forecasting of global and tearing mode stability for tokamaks

2:20 – 2:45 pm  **Vega:** Increased warning times in JET APODIS disruption predictor by Using confidence qualifiers
2:45 – 3:05 pm  Coffee Break

3:05 – 3:30 pm  Granetz: Developing Universal Disruption Warning Algorithms using large databases on Alcator C-Mod, EAST, and DIII-D

3:30 – 3:55 pm  Rea: Exploratory machine-learning studies for disruption prediction using large databases on DIII-D

3:55 – 4:20 pm  Ho: Tokamak profile database construction incorporating Gaussian process regression

4:20 – 4:45 pm  Churchill: Finding structure in large datasets of particle distribution functions using unsupervised machine learning

4:45 – 5:10 pm  Smith: Identification of ELM evolution patterns with unsupervised clustering of time-series similarity metrics

5:10 – 5:40 pm  Discussion for Disruption Prediction and Pattern Recognition

June 1st

Morning Session

Session 5. Real time and Integrated Data Analysis

8:00 – 8:30 am  Citrin (Invited): Realtime capable first principle transport modelling for tokamak prediction and control

8:30 – 8:55 am  Meneghini: Integrated infrastructure for the development of machine-learning models aimed at fusion applications

8:55 – 9:20 am  Grierson: Interpretive Analysis and Predictive Discharge Modeling with TRANSP

9:20 – 9:45 am  Jakubowski: Thermographic measurements of power loads to plasma facing components at Wendelstein 7-X

9:45 – 10:10 am  Puig: Wendelstein 7-X near real-time image diagnostic system for plasma facing components protection

10:10 – 10:30 am  Coffee Break

10:30 – 10:55 am  Logan: OMFIT Tokamak Profile Data Fitting and Physics Analysis

10:55 – 11:20 am  Kostuk: Automatic between-pulse analysis of DIII-D experimental data performed remotely on a supercomputer at Argonne National Laboratory


11:45 – 12:10 pm  Xu: Data processing on application of real-time systems and validation of diagnostics in HL-2A

12:10 – 1:00 pm  Lunch Break (Provided at site)
Afternoon Session:
Session 6. Real time and Integrated Data Analysis Experimental Data Analysis and Synthetic Diagnostics

1:00 – 1:30 pm  Salewski (Invited): Integrated data analysis of fast-ion measurements by velocity-space tomography
1:30 – 1:55 pm  Wojenski: Advanced real-time data quality monitoring concept for GEM detector based SXR plasma diagnostics
1:55 – 2:20 pm  Nornberg - Incorporating beam attenuation calculations into an Integrated Data Analysis model of plasma impurity content
2:20 – 2:50 pm  Discussion for Real Time and Integrated Data Analysis

2:50 – 3:10 pm  Coffee Break

3:10 – 3:40 pm  Kajita (Invited): Assessment and mitigation of wall light reflection in ITER by ray tracing
3:40 – 4:05 pm  Yu: Data analysis and effect corrections of Phase Contrast Imaging diagnostic on HL-2A tokamak
4:05 – 4:30 pm  Liu, Y.: Synthetic diagnostic for interpreting the ECE spectrum in LHW-heated plasmas on EAST
4:30 – 4:55 pm  Liu, C.: Explanation of prompt growth of ECE signal in tokamak runaway electron experiments using ECE synthetic diagnostic
4:55 – 5:15 pm  Discussion for Experimental Data Analysis and Synthetic Diagnostics

6:30 - 9:30pm  Banquet Dinner at Top of the Hub – Boston, MA

June 2nd

Morning Session
Session 7. Data Management/handling

8:00 – 8:30 am  Marzouk (Invited): Computational advances for Bayesian inference and optimal experimental design
8:30 – 8:55 am  Pinches: IMAS Updates
8:55 – 9:20 am  Lupelli: The SAGE Project: A paradigm shift in the Storage Systems for Data Centric Computing
9:45 – 10:10 am  Greenwald: Navigational Data Management
10:10 – 10:30 am  **Coffee Break**

10:30 – 10:55 am  **Zabeo**: Diagnostic Data Handling in the PCS
10:55 – 11:20 am  **Emoto**: Improvement of Automatic Physics Data Analysis Environment for the LHD Experiment
11:20 – 11:45 am  **Kim**: Development of unified data analysis in KSTAR
11:45 – 12:10 pm  **de Witt**: A Comparison of Data Management Techniques Across Different Science Disciplines
12:10 – 12:40 pm  Discussion for Data Management & Meeting Closing