Session Program

22–26 May 2023

Information and Statistics for Nuclear Experiment and Theory workshop (ISNET-9)

ISNET

Washington University in St. Louis
1 Brookings Dr, St. Louis, MO 63130

Tuesday 23 May

08:45

ISNET: Welcome

Session | **Location:** Washington University in St. Louis, Crow 201 | **Convener:** Brad Jolliff

09:00

09:00

ISNET: Statistical methods for optimization, Bayesian inference, and uncertainty quantification

Session | **Location:** Washington University in St. Louis, Crow 201

09:00–09:30

Recent tools and developments in Bayesian statistics

Speaker
Yuling Yao

09:30–10:00

A statistical exploration of CEMP star classification with s-process models

Speaker
Andrés Yagüe López

10:00–10:30

Global fits and Bayesian inference in "Beyond the Standard Model" physics (virtual)

Speaker
Anders Kvellestad

10:30

11:00

ISNET: Statistical methods for optimization, Bayesian inference, and uncertainty quantification

Session | **Location:** Washington University in St. Louis, Crow 201

11:00–11:30

Applications of novel chiral interactions to quantum Monte Carlo methods and astrophysical data analysis

Speaker
Rahul Somasundaram

11:30–12:00

Sequential Bayesian experimental design for calibration of expensive physics models

Speaker
Ozge Sürer

12:00–12:30

History matching for nuclear ab initio calculations

Speaker
Christian Forssén

12:30

13:30

ISNET: Statistical methods for optimization, Bayesian inference, and uncertainty quantification

Session | **Location:** Washington University in St. Louis, Crow 201

13:30–14:00

Bayesian probability updates using sampling/importance resampling: applications in nuclear theory

Speaker
Weiguang Jiang

14:00–14:30

Hamiltonian Monte Carlo computation in spatial statistics

Speaker
Debashis Mondal

14:30–15:00

Bayesian model calibration for nuclear decays with the Skyrme finite-amplitude method

Speaker
Tong Li

15:00

15:30

ISNET: Statistical methods for optimization, Bayesian inference, and uncertainty quantification

Session | **Location:** Washington University in St. Louis, Crow 201

15:30–16:00

Accounting for material and experimental variability using a random effects Bayesian inferential framework

Speaker
Denielle Ricciardi

16:00–16:15

Short talk: Bayesian calibration of viscous anisotropic hydrodynamic simulations of heavy-ion collisions

Speaker
Dananjaya Liyanage

16:15–16:30

Short Talk: How Uncertain Am I? Theoretical errors in Bayesian model calibration for EFTs

Speaker
Jason Bub

16:30

Wednesday 24 May

08:55

ISNET: Symposium in Honor of John Clark: Different Aspects of Machine Learning

Session | **Location:** Washington University in St. Louis, Crow 201

08:55–09:00 **Prof. John W. Clark**

Speaker
Henric Krawczynski

09:00–09:45 **John Clark: Physicist at the computational frontier (virtual)**

Speaker
Henrik Bohr

09:45–10:30 **Machine learning for nuclear physics**

Speaker
Witek Nazarewicz

10:30

11:00

ISNET: Symposium in Honor of John Clark: Different Aspects of Machine Learning

Session | **Location:** Washington University in St. Louis, Crow 201

11:00–11:15 **Machine learning of nuclear properties : a brief tribute to Prof. John Walter Clark (recording)**

Speaker
Eirene Mavrommatis

11:15–11:45

Surrogate models of nuclear density functional theory with gaussian processes and autoencoders

Speaker
Marc Verriere

11:45–12:15 **Machine learning for heavy-ion accelerators (virtual)**

Speaker
Yue Hao

12:15

13:15

ISNET: Symposium in Honor of John Clark: Different Aspects of Machine Learning

Session | **Location:** Washington University in St. Louis, Crow 201

13:15–13:45 **Nuclear masses learned from a probabilistic neural network**

Speaker
Amy Lovell

13:45–14:15 **Machine learning for the many-body problem**

Speaker
Alessandro Lovato

14:15–14:45

Mapping out the thermodynamic stability of a QCD EOS with a critical point using active learning

Speaker
Debora Mroczek

14:45

15:15

ISNET: Symposium in Honor of John Clark: Different Aspects of Machine Learning

Session | **Location:** Washington University in St. Louis, Crow 201

15:15–15:45 **Predicting nuclear masses with product-unit networks (virtual)**

Speaker
Babette Dellen

15:45–16:15 **Machine learning for Deeply Virtual Compton Scattering (virtual)**

Speaker
Manal Almaeen

16:15–16:30

Short Talk: Deep learning pairing correlations from neural-network quantum states

Speaker
Jane Kim

16:30

Thursday 25 May

09:00

ISNET: Emulators and Resampling Techniques

Session | **Location:** Washington University in St. Louis, Crow 201

09:00–09:30 **Overview of emulators for nuclear physics**

Speaker
Dick Furnstahl

09:30–10:00 **Known Boundary Emulation (virtual)**

Speaker
Ian Vernon

10:00–10:30
Gaussian process regression constrained by boundary value problems

Speaker
Mamikon Gulian

10:30

11:00

ISNET: Emulators and Resampling Techniques

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11:00–11:30
Multi-output gaussian processes for inverse uncertainty quantification in neutron noise analysis (virtual)

Speaker
Paul Lartaud

11:30–12:00
Quantification for a covariant energy density functional emulated by the reduced basis method

Speaker
Pablo Giuliani

12:00–12:30
Hamiltonian Monte Carlo & eigenvector continuation for ab initio nuclear physics

Speaker
Andreas Ekström

12:30

13:30

ISNET: Emulators and Resampling Techniques

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13:30–14:00
Eigenvector continuation emulators for the ab initio symmetry-adapted framework

Speaker
Kevin Becker

14:00–14:30
Bootstrap for multivariate time series and gravitational wave detection

Speaker
Soumen Lahiri

14:30–15:00
Data integration using constrained Gaussian process models with applications to nuclear physics

Speaker
Shuang Zhou

15:00

15:30

ISNET: Emulators and Resampling Techniques

Session | **Location:** Washington University in St. Louis, Crow 201

15:30–15:45
Short Talk: Potential energy surface emulation and impact on fission trajectories

Speaker
Daniel Lay

15:45–16:00
Short Talk: Ex fissio ad astra: extending optical models to the fission fragment region

Speaker
Kyle Beyer

16:00–16:15 **Short Talk: Reduced Basis Methods and Scattering**

Speaker
Daniel Odell

16:15

Friday 26 May

09:00

ISNET: Advanced Statistics Techniques for Analyzing Experimental Data and for Accelerator design

Session | **Location:** Washington University in St. Louis, Crow 201

09:00–09:30

AI/ML+data science tools for detector design at the Electron Ion Collider (virtual)

Speaker
Cristiano Fanelli

09:30–10:00

Excavating insights from sparse data with statistics and machine learning

Speaker
Kyle Godbey

10:00–10:30

Gaussian processes for autonomous data acquisition at large-scale synchrotron and neutron facilities

Speaker
Marcus Noack

10:30

11:00

ISNET: Advanced Statistics Techniques for Analyzing Experimental Data and for Accelerator design

Session | **Location:** Washington University in St. Louis, Crow 201

11:00–11:30

Deep learning techniques in ground-based imaging gamma-ray observatories (virtual)

Speaker
Daniel Nieto

11:30