

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

## **Report of Contributions**

Contribution ID: 1

Type: **not specified**

# Welcome

**Presenter:** JOLIFF, Brad (WashU)

Contribution ID: 2

Type: **not specified**

## **Statistical tools and ML for accelerator design**

Contribution ID: 3

Type: **not specified**

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

*Friday, 26 May 2023 09:00 (30 minutes)*

**Presenter:** FANELLI, Cristiano (William & Mary)

**Session Classification:** ISNET

Contribution ID: 4

Type: **not specified**

# Excavating insights from sparse data with statistics and machine learning

*Friday, 26 May 2023 09:30 (30 minutes)*

**Presenter:** GODBEY, Kyle

**Session Classification:** ISNET

Contribution ID: 5

Type: **not specified**

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

*Friday, 26 May 2023 10:00 (30 minutes)*

**Presenter:** NOACK, Marcus (Lawrence Berkeley National Laboratory)

**Session Classification:** ISNET

Contribution ID: 6

Type: **not specified**

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

*Friday, 26 May 2023 11:00 (30 minutes)*

**Presenter:** NIETO, Daniel (Madrid University)

**Session Classification:** ISNET

Contribution ID: 7

Type: **not specified**

**TDB**

**Session Classification:** ISNET



Contribution ID: 8

Type: **not specified**

## **Recent tools and developments in Bayesian statistics**

*Tuesday, 23 May 2023 09:00 (30 minutes)*

**Presenter:** YAO, Yuling (Flatiron Institute)

**Session Classification:** ISNET

Contribution ID: 9

Type: **not specified**

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

*Tuesday, 23 May 2023 09:30 (30 minutes)*

**Presenter:** YAGÜE LÓPEZ, Andrés (Los Alamos National Lab)

**Session Classification:** ISNET

Contribution ID: **10**

Type: **not specified**

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

*Tuesday, 23 May 2023 10:00 (30 minutes)*

**Presenter:** KVELLESTAD, Anders (University of Oslo)

**Session Classification:** ISNET

Contribution ID: 11

Type: **not specified**

## History matching for nuclear ab initio calculations

*Tuesday, 23 May 2023 12:00 (30 minutes)*

**Presenter:** FORSSÉN, Christian (Durham University)

**Session Classification:** ISNET

Contribution ID: 12

Type: **not specified**

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

*Tuesday, 23 May 2023 15:30 (30 minutes)*

**Presenter:** RICCIARDI, Denielle (Sandia National Laboratories)

**Session Classification:** ISNET

Contribution ID: 13

Type: **not specified**

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

*Tuesday, 23 May 2023 13:30 (30 minutes)*

**Presenter:** JIANG, Weiguang (Chalmers University)

**Session Classification:** ISNET

Contribution ID: 14

Type: **not specified**

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

*Tuesday, 23 May 2023 11:00 (30 minutes)*

**Presenter:** SOMASUNDARAM, Rahul (Syracuse University)

**Session Classification:** ISNET

Contribution ID: 15

Type: **not specified**

## **John Clark: Physicist at the computational frontier (virtual)**

*Wednesday, 24 May 2023 09:00 (45 minutes)*

**Presenter:** BOHR, Henrik

**Session Classification:** ISNET



Contribution ID: 16

Type: **not specified**

## Machine learning for nuclear physics

*Wednesday, 24 May 2023 09:45 (45 minutes)*

**Presenter:** NAZAREWICZ, Witek (MSU/FRIB)

**Session Classification:** ISNET

Contribution ID: 17

Type: **not specified**

## **Nuclear masses learned from a probabilistic neural network**

*Wednesday, 24 May 2023 13:15 (30 minutes)*

**Presenter:** LOVELL, Amy (Los Alamos National Lab)

**Session Classification:** ISNET

Contribution ID: **18**

Type: **not specified**

## **Machine learning for the many-body problem**

*Wednesday, 24 May 2023 13:45 (30 minutes)*

**Presenter:** LOVATO, Alessandro (Argonne National laboratory)

**Session Classification:** ISNET

Contribution ID: 19

Type: **not specified**

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

*Wednesday, 24 May 2023 14:15 (30 minutes)*

**Presenter:** MROCZEK, Debora (University of Illinois)

**Session Classification:** ISNET

Contribution ID: **20**

Type: **not specified**

**TDB**

**Session Classification:** ISNET

Contribution ID: 21

Type: **not specified**

**TDB**

**Session Classification:** ISNET

Contribution ID: 22

Type: **not specified**

**TDB**

**Session Classification:** ISNET

Contribution ID: 23

Type: **not specified**

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

*Wednesday, 24 May 2023 16:15 (15 minutes)*

**Presenter:** KIM, Jane

**Session Classification:** ISNET



Contribution ID: 24

Type: **not specified**

## Short Talk

**Presenter:** CHEN, Yehu

**Session Classification:** ISNET

Contribution ID: 25

Type: **not specified**

# Machine learning for Deeply Virtual Compton Scattering (virtual)

*Wednesday, 24 May 2023 15:45 (30 minutes)*

**Presenter:** ALMAEEN, Manal

**Session Classification:** ISNET

Contribution ID: 26

Type: **not specified**

## Overview of emulators for nuclear physics

*Thursday, 25 May 2023 09:00 (30 minutes)*

**Presenter:** FURNSTAHL, Dick

**Session Classification:** ISNET

Contribution ID: 27

Type: **not specified**

# Quantification for a covariant energy density functional emulated by the reduced basis method

*Thursday, 25 May 2023 11:30 (30 minutes)*

**Presenter:** GIULIANI, Pablo (Michigan State University)

**Session Classification:** ISNET

Contribution ID: 28

Type: **not specified**

# Gaussian process regression constrained by boundary value problems

*Thursday, 25 May 2023 10:00 (30 minutes)*

**Presenter:** GULIAN, Mamikon (Sandia National Laboratories)

**Session Classification:** ISNET

Contribution ID: 29

Type: **not specified**

## **Multi-output gaussian processes for inverse uncertainty quantification in neutron noise analysis (virtual)**

*Thursday, 25 May 2023 11:00 (30 minutes)*

**Presenter:** LARTAUD, Paul

**Session Classification:** ISNET

Contribution ID: **30**

Type: **not specified**

## **Sequential Bayesian experimental design for calibration of expensive physics models**

*Tuesday, 23 May 2023 11:30 (30 minutes)*

**Presenter:** SÜRER, Ozge

**Session Classification:** ISNET

Contribution ID: 31

Type: **not specified**

## **Eigenvector continuation emulators for the ab initio symmetry-adapted framework**

*Thursday, 25 May 2023 13:30 (30 minutes)*

**Presenter:** BECKER, Kevin

**Session Classification:** ISNET



Contribution ID: 32

Type: **not specified**

## **Bootstrap for multivariate time series and gravitational wave detection**

*Thursday, 25 May 2023 14:00 (30 minutes)*

**Presenter:** LAHIRI, Soumen (Washington University)

**Session Classification:** ISNET

Contribution ID: 33

Type: **not specified**

## **Data integration using constrained Gaussian process models with applications to nuclear physics**

*Thursday, 25 May 2023 14:30 (30 minutes)*

**Presenter:** ZHOU, Shuang (Arizona State University)

**Session Classification:** ISNET

Contribution ID: 34

Type: **not specified**

## **Known Boundary Emulation (virtual)**

*Thursday, 25 May 2023 09:30 (30 minutes)*

**Presenter:** VERNON, Ian

**Session Classification:** ISNET

Contribution ID: 35

Type: **not specified**

## **Short Talk: Potential energy surface emulation and impact on fission trajectories**

*Thursday, 25 May 2023 15:30 (15 minutes)*

**Presenter:** LAY, Daniel

**Session Classification:** ISNET

Contribution ID: 36

Type: **not specified**

## **Short Talk: Ex fissio ad astra: extending optical models to the fission fragment region**

*Thursday, 25 May 2023 15:45 (15 minutes)*

**Presenter:** BEYER, Kyle

**Session Classification:** ISNET

Contribution ID: 37

Type: **not specified**

## **Short Talk: Reduced Basis Methods and Scattering**

*Thursday, 25 May 2023 16:00 (15 minutes)*

**Presenter:** ODELL, Daniel

**Session Classification:** ISNET

Contribution ID: 38

Type: **not specified**

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

*Tuesday, 23 May 2023 14:30 (30 minutes)*

**Presenter:** LI, Tong (LLNL)

**Session Classification:** ISNET

Contribution ID: 39

Type: **not specified**

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

*Tuesday, 23 May 2023 16:00 (15 minutes)*

**Presenter:** LIYANAGE, Dananjaya

**Session Classification:** ISNET



Contribution ID: 40

Type: **not specified**

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

*Tuesday, 23 May 2023 16:15 (15 minutes)*

**Presenter:** BUB, Jason

**Session Classification:** ISNET

Contribution ID: 41

Type: **not specified**

**TDB**

**Session Classification:** ISNET

Contribution ID: 42

Type: **not specified**

## **Hamiltonian Monte Carlo computation in spatial statistics**

*Tuesday, 23 May 2023 14:00 (30 minutes)*

**Presenter:** MONDAL, Debashis (WashU)

**Session Classification:** ISNET

Contribution ID: 43

Type: **not specified**

**TDB**

**Session Classification:** ISNET

Contribution ID: 44

Type: **not specified**

## Hamiltonian Monte Carlo & eigenvector continuation for ab initio nuclear physics

*Thursday, 25 May 2023 12:00 (30 minutes)*

**Presenter:** EKSTRÖM, Andreas (Chalmers University of Technology)

**Session Classification:** ISNET

Contribution ID: 45

Type: **not specified**

## **Machine learning for heavy-ion accelerators (virtual)**

*Wednesday, 24 May 2023 11:45 (30 minutes)*

**Presenter:** HAO, Yue (Michigan State University)

**Session Classification:** ISNET

Contribution ID: 46

Type: **not specified**

## **Predicting nuclear masses with product-unit networks (virtual)**

*Wednesday, 24 May 2023 15:15 (30 minutes)*

**Presenter:** DELLEN, Babette

**Session Classification:** ISNET

Contribution ID: 47

Type: **not specified**

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

*Wednesday, 24 May 2023 11:15 (30 minutes)*

**Presenter:** VERRIERE, Marc

**Session Classification:** ISNET



Contribution ID: 48

Type: **not specified**

## **Bayesian parameter estimation of QGP viscosities in partial chemical equilibrium**

**Presenter:** GORDEEV, Andrew

**Session Classification:** ISNET: Poster Session

Contribution ID: 49

Type: **not specified**

## **Accounting for Material and Experimental Variability Using a Random Effects Bayesian Inferential Framework**

**Presenter:** RICCIARDI, Denielle

**Session Classification:** ISNET: Poster Session

Contribution ID: 50

Type: **not specified**

## **Gaussian processes for the nuclear equation of state**

**Presenter:** GÖTTLING, Hannah

**Session Classification:** ISNET: Poster Session

Contribution ID: 51

Type: **not specified**

## **Nuclear Binding energy prediction using Deep Learning on AME2020 dataset**

**Presenter:** BHANDARI, Ramesh

**Session Classification:** ISNET: Poster Session

Contribution ID: 52

Type: **not specified**

## Variational Bayes Computer Models

**Presenter:** SON, Mookyoung

**Session Classification:** ISNET: Poster Session

Contribution ID: 53

Type: **not specified**

## Gaussian Process emulation using surmise

*Monday, 22 May 2023 09:05 (1h 40m)*

**Presenters:** CHAN, Moses (Northwestern); Surer, Özge (Miami University)

**Session Classification:** BAND Camp

Contribution ID: 54

Type: **not specified**

## Welcome and Intro

*Monday, 22 May 2023 09:00 (5 minutes)*

**Presenter:** PIARULLI, Maria (Washington University)

**Session Classification:** BAND Camp

Contribution ID: 55

Type: **not specified**

## **Reduced Basis Methods for emulation and the ROSE software package**

*Monday, 22 May 2023 11:15 (1h 30m)*

**Primary authors:** ODELL, Daniel (Ohio); GIULIANI, Pablo (MSU/FRIB)

**Presenters:** ODELL, Daniel (Ohio); GIULIANI, Pablo (MSU/FRIB)

**Session Classification:** BAND Camp



Contribution ID: 56

Type: **not specified**

## Bayesian Model Mixing using Taweret

*Monday, 22 May 2023 14:15 (1h 30m)*

**Presenters:** SEMPOSKI, Alexandra (Ohio University); YANNOTTY, John (Ohio State); PRATOLA, Matt (Ohio State)

**Session Classification:** BAND Camp

Contribution ID: 57

Type: **not specified**

## The Bayesian Mass Explorer, BMEX

*Monday, 22 May 2023 16:15 (40 minutes)*

**Presenter:** GODBEY, Kyle (MSU/FRIB)

**Session Classification:** BAND Camp

Contribution ID: 58

Type: **not specified**

## **Experimental Design and the BAND software framework**

*Monday, 22 May 2023 16:55 (35 minutes)*

**Presenters:** FURNSTAHL, Dick (Ohio State); NAZAREWICZ, Witek (MSU/FRIB)

**Session Classification:** BAND Camp

Contribution ID: 59

Type: **not specified**

## **Machine Learning of Nuclear Properties☒: A Brief Tribute to Prof. John Walter Clark**

**Presenter:** MAVROMMATIS, Eirene

Contribution ID: **60**

Type: **not specified**

## **Machine learning of nuclear properties: a brief tribute to Prof. John Walter Clark (recording)**

*Wednesday, 24 May 2023 11:00 (15 minutes)*

**Presenter:** MAVROMMATIS, Eirene

**Session Classification:** ISNET

Contribution ID: **61**

Type: **not specified**

## **Prof. John W. Clark**

*Wednesday, 24 May 2023 08:55 (5 minutes)*

**Presenter:** KRAWCZYNSKI, Henric

**Session Classification:** ISNET