# Bryan McKinnon

## CLAS Collaboration Chair Candidate Statement

CLAS Collaboration Meeting July 2025

# Education and Employment

University of Glasgow, M.Sci (Hons) in Physics

University of Glasgow, PhD in Nuclear and Hadron Physics

Search for the $\Theta^+$ pentaquark in the reaction $\gamma d \rightarrow pK^-K^+n$

B. McKinnon et al., Phys. Rev. Lett. 96, 212001 (2006)

Research Fellow, University of Glasgow


University of Glasgow

clas

# Esteem

Editorial Board Member Nuclear Physics News International

Board Member of the European Physical Society Nuclear Physics Division

Member of the eInfrastructure for Research and Innovation for STFC (IRIS) Delivery Board (delivering CLAS12 use of UKGridPP resources)

Chair of the CLAS Hadron Spectroscopy Working Group (re-elected to second term 2022)

Chair of the CLAS Membership Committee (elected)

Board Member of the Institute of Physics Nuclear Physics Group Committee

Member of the CLAS Speakers Committee

PhD Supervisor

# Research Administration

Defence Jury, Université Paris-Saclay, France PhD Thesis (CLAS)

Organising committee member for NSTAR 2024

Member of the ePIC Collaboration (EIC)

Organising committee for the Exotic Hadron Spectroscopy Workshop series

Opponent/Reviewer AANL, Yerevan, Armenia PhD Thesis (CLAS)

School of Physics IT Operations team member

Nuclear and Hadron Physics Research Compute Systems Administrator

Member of the Jefferson Lab Heavy Photon Search (HPS)  Collaboration

Member of the A2 Collaboration at MAMI, Mainz, Germany

Hardware lead for the Sellafield project on cosmic muon tomography for non-destructive assay of nuclear waste

# Teaching and University Related Administration

University of Glasgow Radiation Protection and Security Supervisor

Lecturer Physics and Environmental Biology

Research Skills Lecturer

Physics 2 Tutorial Supervisor

Graduate School Lecturer on Quarks and Hadron Spectroscopy (UK)

Physics 3 Supervisor

Physics 1 Deputy Lab-head

Undergraduate Project Supervisor

# The (most recent) Science

## Measurement of Near-Threshold J/$\psi$ Quasi-real Photoproduction on the Proton and Neutron at CLAS12

R. Tyson[1,*], P. Chatagnon[2], D. G. Ireland[3], B. McKinnon[3], V. Kubarovsky[1], and S. Stepanyan[1]

[1] *Thomas Jefferson National Accelerator Facility, Newport News, Virginia 23606*
[2] *Irfu/DPhN, CEA, F91191 Gif-sur-Yvette, France*
[3] *SUPA, School of Physics and Astronomy, University of Glasgow, Glasgow G12 8QQ, United Kingdom*
[*] *Corresponding author: tyson@jlab.org*

May 2025

Physical Review C

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## Photoproduction of the $\Sigma^+$ hyperon using linearly polarized photons with CLAS

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L. Clark[1,*], B. McKinnon[1,†], D. G. Ireland[1], D. I. Glazier[1], K. Livingston[1], D. Rönchen[2], A. G. Acar[45], P. Achenbach[40], J. S. Alvarado[23] *et al.* (The CLAS Collaboration)

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Phys. Rev. C **111**, 025204 – **Published 20 February, 2025**

DOI: https://doi.org/10.1103/PhysRevC.111.025204

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arXiv > physics > arXiv:2505.01473

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Physics > Data Analysis, Statistics and Probability

*[Submitted on 2 May 2025]*

## Data-driven Approach for Interpolation of Sparse Data

R.F. Ferguson, D.G. Ireland, B. McKinnon

Studies of hadron resonances and their properties are limited by the accuracy and consistency of measured datasets, which can originate from many different experiments. We have used Gaussian Processes (GP) to build interpolated datasets, including quantification of uncertainties, so that data from different sources can be used in model fitting without the need for arbitrary weighting. GPs predict values and uncertainties of observables at any kinematic point. Bayesian inference is used to optimise the hyperparameters of the GP model. We demonstrate that the GP successfully interpolates data with quantified uncertainties by comparison with generated pseudodata. We also show that this methodology can be used to investigate the consistency of data from different sources. GPs provide a robust, model-independent method for interpolating typical datasets used in hadron resonance studies, removing the limitations of arbitrary weighting in sparse datasets.

Comments: 10 pages, 8 figures
Subjects: **Data Analysis, Statistics and Probability (physics.data-an)**; Nuclear Experiment (nucl-ex); Machine Learning (stat.ML)
Cite as: arXiv:2505.01473 **[physics.data-an]**
(or arXiv:2505.01473v1 **[physics.data-an]** for this version)
https://doi.org/10.48550/arXiv.2505.01473

**Submission history**
From: Ryan Ferguson [view email]
**[v1]** Fri, 2 May 2025 13:17:45 UTC (654 KB)

ELSEVIER

Computer Physics Communications
Volume 290, September 2023, 108783


Computational Physics

## Deep learning level-3 electron trigger for CLAS12 ☆

R. Tyson [a], G. Gavalian [b], D.G. Ireland [a], B. McKinnon [a]

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# Challenges and Priorities

**Aware of challenges faced by institutes and individuals**

- I value hard work, dedication, and careful resource prioritisation
- I am committed to supporting the collaboration as Chair
- I would build on the work of previous Chairs

**Envision a Coordinating Committee that**

- Actively seeks and discusses ideas and opinions
- Expands membership to include diverse voices and experiences

**Recognise the need to maintain high-frequency, high-quality scientific output**

- Competition for resources and finances. We need to work harder and smarter
- Better-defined collaboration processes
- Reducing burden and barriers for collaborators
- FTE requirements are too high and should be reduced to attract new members
- The review process for publication is often cumbersome and inefficient
- Engage Institute Representatives to ensure fair application of the charter and by-laws
- Re-evaluation of tiered membership

**Growing use of AI/ML in data processing and analysis**

- Requirements need to be clearly defined
- Resources need consolidating
- Robust validation procedures need to be established

- Experienced and Committed
- Pragmatic and Empathetic
- Decisive and Confident
- Strategic and Creative

**Excited about**

- Large Volumes of Recorded Data
- Next-pass Processing
- Planned Future Run Periods
- Potential Upgrades
- Increased Science Output
- Coordinating Our Efforts

CLAS is well-positioned to increase its impact in hadron physics

I would be honoured to serve and would do so with dedication, enthusiasm and respect

Many thanks for your consideration