Ruairí Brett

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EMPLOYMENT

Postdoctoral Scientist — *Sept. 2019 - Present*
The George Washington University

Research Assistant — *Sept. 2017 - July 2019*
Carnegie Mellon University

Teaching Assistant — *Sept. 2015 - May 2018*
Carnegie Mellon University

EDUCATION

Ph.D. Physics, Carnegie Mellon University — *2015 - 2019*
- *Thesis:* The Scalar Glueball and $K\pi$ Scattering From Lattice QCD
- *Advisor:* Prof. Colin Morningstar

M.Sc. Physics, Carnegie Mellon University — *2015 - 2017*

B.A. (Mod.) Theoretical Physics, Trinity College Dublin — *2011 - 2015*
- First Class Honours
- *Thesis:* Binder Cumulants for the Ising Model using Worm algorithms

SELECTED AWARDS

John Peoples Jr. Presidential Fellowship in Physics 2018/2019

CMU Physics Graduate Student Teaching Award 2018

Student Seminar Best Speaker Award 2nd place, Hampton University Graduate Summer Program (HUGS), Jefferson Lab 2017

TCD First Class Honours Book Prize 2012 & 2014

TCD Dean of Students' Roll of Honour 2014

INVITED TALKS

From two to three-body systems in lattice QCD
MIT Virtual Lattice Field Theory Colloquium Series — *July 2020*
S@INT, Institute for Nuclear Theory, Seattle, WA — *March 2020*
Nuclear Theory Seminar, Lawrence Berkeley National Lab, Berkeley, CA — *March 2020*

Excited State Spectroscopy and Meson-Meson Scattering from Lattice QCD
Theory Seminar, Carnegie Mellon University, Pittsburgh, PA — *Feb 2019*
Nuclear Seminar, The George Washington University, Washington, DC — *Feb 2019*

TEACHING EXPERIENCE

Carnegie Mellon University:
33-151/33-152 Matter & Interactions 1/2 — *Sept. 2015 - May 2018*
- Designed and taught lectures
- Designed and led recitation sessions
- Course material preparation: exams, assignments, etc.

PUBLICATIONS

The spectrum of qubitized QCD: glueballs in a $S(1080)$ gauge theory
A. Alexandru, P. F. Bedaque, *R. Brett*, H. Lamm
arXiv:2112.08482 [hep-lat]
Phys.Rev.D 105 (2022) 11, 114508

Pole position of the $a_1(1260)$ resonance in a three-body unitary framework
D. Sadasivan, A. Alexandru, H. Akdag, F. Amorim, *R. Brett*, C. Culver, M. Döring, F. X. Lee, M. Mai
2112.03355 [hep-ph]
Phys.Rev.D 105 (2022) 5, 054020

Higher order finite volume quantization conditions for two spinless particles
F. X. Lee, A. Alexandru, *R. Brett*
arXiv:2107.04430 [hep-lat]
Phys.Rev.D 105 (2022) 5, 054517

Three-body dynamics of the $a_1(1260)$ resonance from lattice QCD
M. Mai, A. Alexandru, *R. Brett*, C. Culver, M. Döring, F. X. Lee, D. Sadasivan
arXiv:2107.03973 [hep-lat]
Phys.Rev.Lett. 127 (2021) 22, 222001

Three-body interactions from the finite-volume QCD spectrum
R. Brett, C. Culver, M. Mai, A. Alexandru, M. Döring, F. X. Lee
arXiv:2101.06144 [hep-lat]
Phys.Rev.D 104 (2021) 1, 014501

Finite-volume energy spectrum of the K^- K^- K^- system
A. Alexandru, *R. Brett*, C. Culver, M. Döring, D. Guo, F. X. Lee, M. Mai.
arXiv:2009.12358 [hep-lat]
Phys.Rev.D 102 (2020) 11, 114523

Setting the scale for nHYP fermions with the Lüscher-Weisz gauge action
H. Niyazi, A. Alexandru, F. X. Lee, *R. Brett*.
arXiv:2008.13022 [hep-lat]
Phys.Rev.D 102 (2020) 9, 094506

Three pion spectrum in the $I = 3$ channel from lattice QCD
C. Culver, M. Mai, *R. Brett*, A. Alexandru, M. Döring.
arXiv:1911.09047 [hep-lat]
Phys.Rev.D 101 (2020) 11, 114507

The Scalar Glueball and $K\pi$ Scattering from Lattice QCD
R. Brett
PhD. Thesis

Determination of s- and p-wave $I = 1/2$ $K\pi$ scattering amplitudes in $N_\mathrm{f} = 2 + 1$ lattice QCD
R. Brett, J. Bulava, J. Fallica, A. Hanlon, B. Hörz, C. Morningstar.
arXiv:1802.03100 [hep-lat]
Nucl. Phys. B **932**, 29 (2018)

Estimating the two-particle K-matrix for multiple partial waves and decay channels from finite-volume energies
C. Morningstar, J. Bulava, B. Singha, *R. Brett*, J. Fallica, A. Hanlon, B. Hörz.
arXiv:1707.05817 [hep-lat]
Nucl. Phys. B **924**, 477 (2017)

CONFERENCE PROCEEDINGS

Higher order quantization conditions for two spinless particles
F. X. Lee, A. Alexandru, *R. Brett*
arXiv:2110.03750 [hep-lat]

Including Tetraquark Operators in the Low-Lying Scalar Meson Sectors in Lattice QCD
D. Darvish, *R. Brett*, J. Bulava, J. Fallica, A. Hanlon, B. Hörz, C. Morningstar.
arXiv:1909.07747 [hep-lat]
AIP Conf. Proc. 2249 (2020) 1, 030021

Spectroscopy From The Lattice: The Scalar Glueball
R. Brett, J. Bulava, D. Darvish, J. Fallica, A. Hanlon, B. Hörz, C. Morningstar.
arXiv:1909.07306 [hep-lat]
AIP Conf. Proc. 2249 (2020) 1, 030032

$K\pi$ scattering and excited meson spectroscopy using the Stochastic LapH method
R. Brett, J. Bulava, J. Fallica, A. Hanlon, B. Hörz, C. Morningstar.
arXiv:1810.11311 [hep-lat]
PoS (LATTICE2018) 071

Scattering phase shift determinations from a two-scalar field theory and resonance parameters from QCD scattering
D. Darvish, *R. Brett*, J. Bulava, J. Fallica, A. Hanlon, C. Morningstar.
arXiv:1810.11433 [hep-lat]
PoS (LATTICE2018) 070

Scattering from finite-volume energies including higher partial waves and multiple decay channels
R. Brett, J. Bulava, J. Fallica, A. Hanlon, B. Hörz, C. Morningstar, B. Singha.
arXiv:1710.04169 [hep-lat]
EPJ Web Conf. **175**, 05005 (2018)