

Particle Physics Group

UNIVERSITY OF WASHINGTON
SEATTLE, WASHINGTON, USA

Application for Postdoctoral Scholar - Particle Physics Group

To whom it may concern,

About Me

Since March 2021, I have been working as a PhD student in the TP1 group of Universität Siegen with a focus on lattice QCD for heavy flavour physics; further interests include QCD sum rules, new physics models, and quantum simulations. I am currently expected to complete my PhD in summer/early autumn 2024. Previously I studied Theoretical Physics (MPhys) at Durham University in the UK achieving a Class I (Honours).

I am an active member of the TP1 community, having served as a teaching assistant for multiple courses and mentored a Bachelor's student throughout their thesis work. Additionally, I have played a crucial role in the group's sys admin team, dedicating substantial effort to the maintenance and enhancement of the Linux computer systems and also to the education of the users. My contributions have significantly bolstered the support provided to my colleagues in their academic pursuits.

Why University of Washington?

My experience so far in lattice QCD has covered many aspects of the field, however I believe one of the most exciting areas at the forefront of lattice QCD which I have not yet touched on is that of multi-hadron scattering and final states. In that respect, I believe University of Washington to be a perfect place to continue my academic journey. The innovative research performed by Prof. Stephen Sharpe and his research team has been vital in developing the finite-volume formalism necessary to perform lattice calculations and extract the physics of multi-hadron final states.

Lattice QCD has become an indispensable field in describing and understanding the hadronic physics in e.g. leptonic and semileptonic weak decays and by now many of these processes are strongly under control. I believe that the next exciting group of processes in need of study and control from lattice simulations are hadronic weak decays, particularly now as other methods such as QCD factorisation appear to be failing and large tensions with experiment are being suggested. The group of Prof. Stephen Sharpe is the perfect place for me to join the endeavours of the lattice community towards applying the finite-volume formalism to multi-hadron states and delivering quality lattice results applicable to the phenomenology of hadronic decays which are sorely needed to understand the current tensions found.

Why Me?

I am a passionate and dedicated scientist and I am looking forward to continuing my research career beyond my PhD. Throughout my academic career, I have worked on a diverse set of projects, giving me a rich and broad knowledge of particle physics phenomenology and lattice simulations. I am a very hard-working individual who will bring passion to my work and happily dedicate myself to research to the full extent of my abilities. I have the adaptability and aptitude needed to apply myself to any task or research goal needed of me and I'm eager to find new challenges to confront and overcome. I am also keen to integrate myself into any working community I find myself a part of, and will look to apply myself to the group's needs beyond scientific research.

The opportunity to continue developing my own knowledge and expertise while contributing towards the expansion of scientific knowledge is something most valuable to me, and I believe working with the Particle Physics Group of University of Washington and Prof. Stephen Sharpe is ideally situated for this.

Thank you for your time and consideration, I look forward to hearing from you.

Sincerely,

Matthew Black