

## Institute for Theoretical Particle Physics

July 15, 2020

RWTH AACHEN UNIVERSITY, GERMANY

### Application for PhD position

To whom it may concern,

### About Me

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I have recently finished my degree at the University of Durham studying Theoretical Physics (MPhys), achieving a First Class Honours. I have spent the previous years focusing on particle physics, through studying courses such as Relativistic Quantum Mechanics, Gauge Field Theories, and Nuclear and Particle Physics. During my third year, I looked into the difficulties of understanding and predicting the behaviours of QCD in a project to model the inter-quark potential in quarkonia systems. In my Masters thesis, I tested the Two Higgs Doublet Model of Type II against flavour observables, finding constraints on its parameters, with looks to future works of the Two Higgs Doublet Model in the framework of SM4. Through these courses and projects, I have developed a strong interest in the field of particle physics, flavour and Higgs physics in particular. I am a very hard-working individual who will bring passion to my work and happily dedicate myself to my studies to the full extent of my abilities.

### Why RWTH Aachen University ?

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I believe the RTG at Aachen would be a great place for me to continue my studies. The group's work in Higgs physics and extensions beyond the Standard Model aligns closely with what I have explored through my Masters program. The extensive resources of RWTH Aachen University and its frequent collaborations with other institutions across the world would provide a great base to develop my skills and work alongside some of the leading experts in the world of flavour phenomena. I believe I could be a great addition to the team at RWTH Aachen University and would very much enjoy the opportunity to take my next steps in physics with you.

### Why Me?

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As I learn more and more about the mysteries of physics, there is one thing I can say with certainty: I need to know more. I know that what I have learned so far is just the tip of the iceberg, and I am so eager to continue my learning. I am a hard-working, dedicated student who is ready and willing to begin the intensive study and research of a PhD program. I will bring the strong communication skills and enjoyment of collaborative work that are very important to academic research. Critical thinking is another important aspect which is crucial in performing research and understanding fundamental physics; this is a skill I have used across many disciplines of my life and will apply this skill to all my future pursuits in science. The opportunity to continue my studies and begin to contribute towards the expansion of scientific knowledge would be something most valuable to me, and I would relish the chance to dedicate myself fully to this through a PhD position at RWTH Aachen University.

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

Sincerely,

**Matthew Rossetter**

*Attached: Curriculum Vitae, Academic Transcript, Masters Thesis, Statement of Research Interests*