Othmane Rifki
othmane.rifki@cern.ch
Bahrenfelder Chaussee 92
22761 Hamburg, Germany

May 15, 2020

Postdoctoral Appointee at Argonne National Laboratory

Dear Dr. Metcalfe and members of the selection committee,

Over the course of my PhD and DESY Fellowship, I conducted my research in order to better understand the fundamental interactions of elementary particles at energies never explored before and to search for new physics phenomena while developing new detector capabilities.

I joined the ITk strips community to build a module loading station at DESY in a newly commissioned clean room, in close collaboration with engineers from DESY and researchers from other institutes. After completing the project, I demonstrated that the station is ready to load over one thousand silicon strip modules for the ITk end-cap in the module loading Final Design Review at CERN in February 2020. This experience was invaluable in teaching me about silicon detectors and the testing of silicon modules, a key step before loading the modules.

In parallel to my detector work, I searched for dark matter production by directly measuring decays of the Higgs boson to invisible particles. As analysis contact, I led this search to set the best LHC limit on invisible Higgs boson decays to date, extending the sensitivity of this fundamental probe for dark matter by 50%. With a conference note released in April 2020, and building upon a collaboration with theorists that I established, I am currently finalizing the paper that will feature a better control of the main $Z\,(\nu\nu)$+jets background.

I would like to come to ANL to benefit and learn from the high energy physics group that has been instrumental to the success of the ATLAS experiment by leading major physics analyses and building key elements of the detector. I have a deep passion for and experience in both of these areas, and was fortunate to spend one year at ANL as an ASC graduate fellow and work extensively with the group throughout my PhD. This combination of factors makes me want to re-join the ANL group to work on exciting new physics analyses and building the next generation silicon detector of the ATLAS experiment.

I invite you to read my contributions and plans in the attached research statement and CV. Thank you for your time and effort in considering my application.

Sincerely,

Othmane Rifki