



May 20, 2020

DESY.

Applicant for Postdoctoral Research Scientist at Columbia University

Dear Prof. Parsons, 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 while developing new detector capabilities. I want to strengthen my expertise in these areas as a Postdoctoral Research Scientist with the ATLAS group at Columbia.

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 test and load over one thousand silicon strip modules for the ITk end-cap in the module loading Final Design Review at CERN in February 2020.

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 decays to date, extending the sensitivity of this dark matter probe by 54%. With a conference note released in April 2020, and building upon a collaboration I established with theorists, I am currently finalizing the paper that will feature a better control of the main Z+jets background.

I would like to come to Columbia to 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 liquid argon (LAr) calorimeter system. I have a deep passion and experience in physics analysis, detector development, and data acquisition systems. I would be delighted to expand my experience by working on exciting new physics analyses and developing the next generation readout of the LAr detector of the ATLAS experiment.

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

Sincerely,

Othmane Rifki

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