

## Maxie Dion Schmidt

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November 15, 2021

To whom it may concern,

I am applying for a position to work at GitHub to begin next year after I graduate with my Ph.D. in mathematics from the Georgia Institute of Technology in 2022. My doctoral thesis committee is headed by Professors Michael Lacey and Josephine Yu with Matt Baker, Jayadev Athreya at the University of Washington, and Bruce Berndt at the University of Illinois at Urbana-Champaign. The basis for the work in my dissertation summarizes and extends work of mine published over the last few years in the *Ramanujan Journal*, *Acta Arithmetica* and the *American Mathematical Monthly*. This work connects functions from multiplicative number theory with the theory of partitions. I feel that the position is a good fit for both myself and researchers at GitHub already working in software based experimental mathematics. My background and experience in open source software, symbolic computation and experimental mathematics adds breadth that sets my goals and career trajectory apart from other distinguished applicants.

My research combines number theory, combinatorics and software development. More broadly, I have interests in studying combinatorial and analytic number theory, in applied cryptography and embedded computer hardware, and in software engineering. My active peer-reviewed publication list is diverse with now over twenty entries, as is my public profile of open source software projects, each of which reflect the breadth and depth of my combined research areas. I am always open to exploring challenging and interesting new problems in mathematics and software engineering. I have been funded as a graduate research assistant for the last three years or so developing open source software in applied mathematical biology at GA Tech that has led to a recent publication in *Bioinformatics* in 2021. My recent work in analytic number theory characterizes the partial sums of the Möbius function. The manuscript showcases new connections to strongly additive functions and the summatory functions of key unsigned sequences whose distributions are given by an Erdős-Kac theorem type variant tending to non-central normal for large  $x$ . The manuscript is accepted this year for my second publication in the *Journal of Number Theory* since entering graduate school. In January of 2022, I am giving an invited talk at the special session in early career number theory at the AMS Joint Mathematics Meetings in Seattle about this new work of mine in analytic number theory.

Thank you for taking the time to consider my application at GitHub.

Sincerely,

Maxie Dion Schmidt

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