Juliette Bruce's Ph.D. Status & Summary of Thesis

I am currently a sixth year graduate student at the University of Wisconsin - Madison, working under the direction of Professor Daniel Erman. I have completed all of the program requirements, and am in the process of preparing my thesis, which I plan to defend in the late Spring of 2020. I then expect to receive my Ph.D. in Mathematics in the Summer of 2020.

My thesis focuses on the study of syzygies of algebraic varieties, and homological methods in algebraic geometry. Broadly the two main components of my thesis are a study of asymptotic syzygies in the setting of semi-ample growth, and the computation of new examples by utilizing high-throughput high-performance computing. A more detailed discussion of this work can be found in my research statement. A majority of the results in my thesis are available in the following papers [BEGSY18, BEGSY19, Bru19, Bru19b].

References

[BEGSY18] Juliette Bruce, Daniel Erman, Goldstein. Steve, and Jay Yang, *Conjectures and computations about Veronese syzygies*, Experimental Mathematics **0** (2018), no. 0, 1-16.

[BEGSY19] ———, *The SchurVeronese package in Macaulay2* (2019). Pre-print: arxiv:1905.12661.

[Bru19a] Juliette Bruce, *Asymptotic syzygies in the setting of semi-ample growth* (2019). Pre-print: arxiv:1904.04944.

[Bru19b] ———, *The quantitative behavior of asymptotic syzygies for Hirzebruch surfaces* (2019). Pre-print: arxiv:1906.07333.