

UTMOST APPLICATION

This is my application to participate in your NSF proposal (UTMOST). I would like to teach linear algebra using the open source textbook *A First Course in Linear Algebra* and Sage/SageMathCloud.

Muhlenberg College is a private undergraduate-only 4-year liberal arts college with about 2,200 students. Muhlenberg is *not* designated as a Minority Institution. We do not have pre-professional programs such as nursing or engineering. Linear Algebra at Muhlenberg usually draws students from many departments including physics, chemistry, biology, accounting/business/economics, as well as mathematics. A typical enrollment in Linear Algebra is about 15–24 (we cap our enrollment for most courses at 24.)

My department offers one section of Linear Algebra every semester and our teaching assignment generally reflects the desire and priorities of individual faculty member. I will ask to be assigned to teach Linear Algebra during the academic years of 2017–2018 and 2018–2019. In particular, I believe it is certainly possible that I can teach Linear Algebra for all four semesters (or as often as you need me) during those years. As we offer only one section of Linear Algebra each semester, it is impossible for me to have control sections.

I taught Linear Algebra at Muhlenberg College 6 times so far. I routinely use Sage in my teaching to a varying degree. For instance, in Linear Algebra, Differential Equations, and Calculus, Sage is used as mostly a visualization tool. In Number Theory, my students are often required to write codes in Sage. I began using SageMathCloud in 2014. Currently, I am supervising a group of undergraduates doing independent research and we are doing all computations in SageMathCloud. For my intro-level statistics course, I use R (not through Sage). I plan to use the new course functionality in SageMathCloud for the first time in my Problem Solving course in Spring 2016. In addition, Sage is my default computer tool when I do my own research in number theory. Some of the calculations I did using Sage were numerical investigations of torsion points of elliptic curves, calculations of L -functions over function fields, and so on.

In February 2006, I was lucky enough to attend the very first Sage Days, which was held in San Diego. From then on, it was amazing for me to witness the continued growth and success of Sage not only as a research tool but also a pedagogical tool. The prospect of participating in your grant proposal is truly exciting to me, as I share with you the main goals of incorporating open source software and textbooks in our classrooms.

My CV and other professional materials can be found at my website <http://mathcs.muhlenberg.edu/~cha/>. Please let me know should you need any other materials from me.

Sincerely,

Byungchul Cha, PhD
Associate Professor of Mathematics
Muhlenberg College

MUHLENBERG

COLLEGE

December 22, 2015

To whom it may concern,

I am writing to support Byungchul Cha's application to participate in your NSF proposal (UTMOST). Muhlenberg is a highly selective liberal arts college with approximately 2200 students. We are located in Pennsylvania, approximately 60 miles north of Philadelphia and 90 miles west of New York City. Our department consists of eight mathematicians, two computer scientists and a statistician.

Byungchul has spoken to me about his interest in integrating Sage into our Linear Algebra course. I understand that the proposal requires participants to teach Linear Algebra or Abstract Algebra during the academic years of 2017–2018 and 2018—2019. Byungchul has indicated that he'd like to teach Linear Algebra during those years. This is a course that Byungchul has regularly taught in the past and we will make every effort to accommodate his request.

Please feel free to contact me if you have any questions: elrykken@muhlenberg.edu.

Sincerely,



Elyn Rykken

Chair and Professor of Mathematics and Computer Science