Champney Projects - Summer 2018

Thank you for your interest in becoming a Frost Research Fellow in Summer 2018! I will be running two parallel projects, with an option for a third (if there is interest). All projects are already in progress; if you work on either, you would be joining an in-progress team of students who are already at various stages of data collection. There will be opportunities for those of you working on the various projects to meet weekly, to share progress and critique one another's work, toward a better final product. Finally, I expect that students working on these projects will present both at the Cal Poly COSAM Research Conference *and* submit a conference proposal, to present the work for an external audience. Please email me with any questions about the projects listed below:

- **Studying students' inquiry in individual and group settings**: Using data from a Fall 2018 course, we will explore students' methods of inquiry into mathematics and proof when working together in groups, and when working individually. How does students' inquiry change when they are working in various different settings? How does it stay the same? How does it evolve over a quarter? What is the role of various group members on one another's inquiry strategies? We will explore these questions, and more (as they interest the participants).
- **Studying students' mathematical narratives**: This project is expected to begin in Spring 2018. We hope to have preliminary data that can be used to design and implement a study on students' mathematical narratives at the undergraduate level - how do students tell the 'story' of various advanced mathematical topics? How do they use imagery and descriptive language to make sense of difficult topics? How do they use analogies, and where do their analogies break down? We will explore these questions, and more (as they interest the participants).
- **Ongoing research in students' understanding of mathematics and physics topics**: There is the possibility to continue previous research on how students make sense of topics that span both mathematics and physics (and other STEM fields), and how students see these topics as similar and different, depending on their perception of the field/audience that will be interested in their results. For a sample paper that represents previous lines of inquiry into this topic, please email dchampne@calpoly.edu.