

# Eileen Evans

# Phoebe Robinson

## Conclusions and future work

Initially, we thought that the must-have feature of this code was to compute the matrix  $G$  efficiently, which we have certainly accomplished. We also exceeded our performance goals by two orders of magnitude. In our proposal, we wrote that we would be thrilled with a two-time speedup. Instead, we got a speedup of over 100. Our research group had attempted parallelization of this calculation with Matlab in the past and has not had success; it was exciting to be able to do better with PyCUDA!

An extension of this project would be to parallelize the entire calculation, for all stations and triangles. We did not have enough time to do this, and our speedup was already very large. One other possible extension would be to increase the granularity of the code by making each thread only do one stress calculation instead of six.

Perhaps the most frustrating aspect of writing these codes was dealing with the horribly large expressions for the stress calculations. We simplified them as much as possible, but they are still enormous calculations. On the other hand, the most gratifying aspect of this project was to be able to do these calculations very, very quickly.