GPU-Accelerated 1D Hydrodynamic Loop Model
PHSX 591 Solar Flares & CMEs
Final Project Proposal

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March 21, 2017

We propose to estimate the energy requirements of flare loop systems through the use of a numerical loop model. This model will solve the one-dimensional gas-dynamic equations given by Longcope 2014 using the finite difference method. This numerical model will be designed to be executed on a graphics processing unit (GPU) to utilize the immense floating-point performance of our GPU. We hope that this promise of increased performance will allow larger loop simulations as compared to previous models.

References

Longcope, D. W. (2014). "A Simple Model of Chromospheric Evaporation and Condensation Driven Conductively in a Solar Flare". In: *ApJ* 795, 10, p. 10. DOI: 10.1088/0004-637X/795/1/10. arXiv: 1409.1886 [astro-ph.SR]. URL: http://adsabs.harvard.edu/abs/2014ApJ...795...10L.