**Blue Waters Petascale Semester Curriculum v1.0**

**Unit 8: OpenACC**

**Lesson 4: Solving the Heat Equation via Jacobi's Method**

**Exercise Instructions for Students**

*Developed by Justin Oelgoetz for the Shodor Education Foundation, Inc.*



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*Browse and search the full curriculum at*[*http://shodor.org/petascale/materials/semester-curriculum*](http://shodor.org/petascale/materials/semester-curriculum)

*We welcome your improvements! You can submit your proposed changes to this material and the rest of the curriculum in our GitHub repository at*[*https://github.com/shodor-education/petascale-semester-curriculum*](https://github.com/shodor-education/petascale-semester-curriculum)

*We want to hear from you! Please let us know your experiences using this material by sending email to* [*petascale@shodor.org*](mailto:petascale@shodor.org)

•Investigate how the problem scales with size:

•if the number of bodies increases does the speedup increase or decrease? How does the code scale for a problem 2 times larger?

•If you know OpenMP, parallelize the code with OpenMP and get timing data – compare the performance as a function of wattage (you’ll need to look this up for the hardware in your machine).