



Department of
Mathematical Sciences

Master's Thesis Defense

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MS Graduate Student

Under the Supervision of Vincent Larson

Thursday, April 7th
2022 @ 9:00am

EMS, Room E423



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Parallel simulation of Phase field equations through Spectral Deferred Corrections

Numerical solutions of partial differential equations (PDEs) are to this day a topic of great interest with applications in a plethora of scientific fields. The method of 'Spectral Deferred Corrections' (SDC) was developed and first referred to as such in 2000, but various advancements have since been made on the method. Using SDC, we can obtain approximations to the solution of an ordinary differential equation (obtained after discretizing the PDE in space) by placing Gauss-quadrature nodes in time and iteratively applying a corrector equation. This colloquium will go into how the method is derived, how it can be applied to so-called 'Phase-field equations', how it was implemented in C++ and how the method performed in select test-cases.

Committee Members:

Prof. Peter Hinow, Vincent Larson, and Dexuan Xi



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