



PDE solver not happy?

Learn *Integral Equations* and *Fast Methods* at UIUC this fall!

What will you learn in this class?

You will learn how integral equations let you solve many common types of partial differential equations (“PDEs”) robustly and quickly.

You will also see many fun numerical ideas and algorithms that bring these methods to life on a computer.

What to expect

- A gentle intro: Linear Algebra/Numerics/Python warm-up
- **Integral Equations** for Laplace, Poisson, Helmholtz and more
- **Quadrature**, or: easy ways to compute difficult integrals
- Tree codes and **Fast Multipole Methods**
- Fun with the **FFT**
- Linear algebra-based techniques (“**Fast direct solvers**”–if time)

Grade: Weekly and bi-weekly homework, final project.

Questions? Ask!

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