Analysis at Clemson

August 29, 2012

Outline

What is analysis?

Classical differential geometers (and classical analysts) did not hesitate to talk about "infinitely small" changes dx^i of the coordinates x^i just as Leibniz had. No one wanted to admit this was nonsense ...

- Michael Spivak

Analysis today

- Provides foundations or motivation for ...
  - Probability theory
  - Differential equations
  - Topology
  - Differential geometry
  - Dynamical systems
- Has applications in ...
  - Physics
  - Medical imaging
  - Modeling

Courses at Clemson

- MTHSC 821 – Linear Analysis
- MTHSC 822 – Measure Theory
- MTHSC 823 – Complex Analysis
- MTHSC 826 – Partial Differential Equations
- MTHSC 831 – Fourier series
- MTHSC 982 – Special Topics

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  - Recurrence equations
  - Stochastic calculus
  - Ergodic theory

Dr. Taufiqar Khan

- Inverse problems
- Parameter estimation in differential equations
- Dynamical systems with applications to medical imaging
- Sparse image representation

Dr. Jeong-Rock Yoon

- Inverse problems emphasizing medical imaging
- Elastography
- Early cancer detection

Dr. Martin Schmoll

- Polygonal billiards, especially infinite billiard tables
- Translation surfaces
- Geodesic flows on surfaces
- Ergodic theory

Recommendations for new students

- Take 821 and 822 as early as possible
- Pass the analysis prelim as quickly as possible
- Take advanced courses in analysis and other areas (computation, statistics, algebra) if they relate to your research.

Graduates working at

- MIT Lincoln Labs
- Texas Instruments
- Georgia Tech
- RIT
- Air Force Research Laboratory