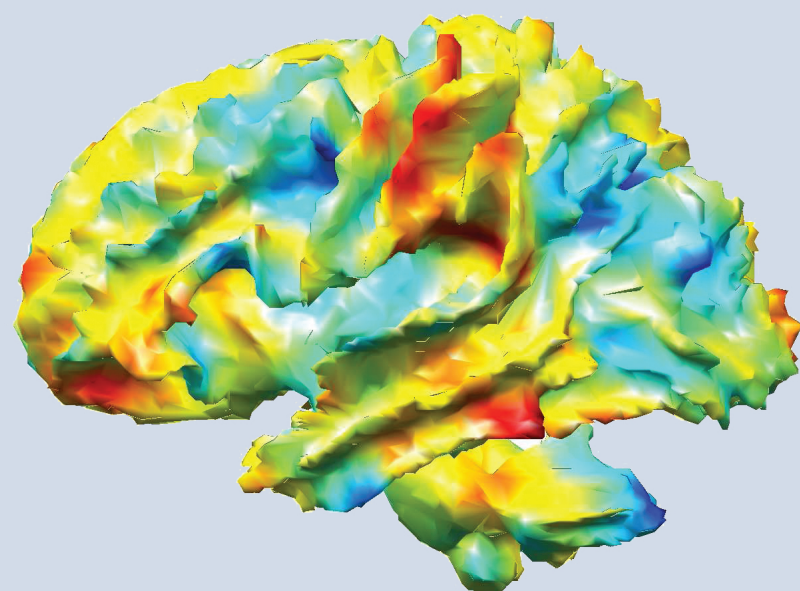


Statistical and Applied Mathematical
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PROGRAM OPPORTUNITIES

- Short- and long-term Visits
- New Researcher Fellowships
- Postdoctoral Fellowships
- Graduate Student Fellowships
- Graduate Courses
- Working Group meetings
- Workshop Conferences



Figures provided by Hongtu Zhu, UNC and Moo Chung, U. Wisconsin Madison.

Neuroscience is accumulating exponentially growing volumes of data on specific aspects of the healthy and diseased brain, in different species, and at different ages. Brain theory, modeling, and statistics will be essential to turn this data into better understanding of the brain.

The Challenges in Computational Neuroscience program will develop mathematical and statistical methods in neuroscience to meet this critical need. Key problems include understanding the mechanisms that bridge multiple spatial and temporal scales, linking the activity of individual components (e.g., molecular biology, genetics, and neuron networks) and their interactions to the overall complex dynamic behavior of the brain and nervous system.

The CCNS program will address the underlying methodological, theoretical, and computational challenges. Probability and statistics, dynamical systems, geometry, and computer science will be combined with respect to theory and in applications. Researchers in neuroscience, biomedical engineering, computer science, applied mathematics, and statistics are encouraged to apply to the program.

The CCNS program will focus on the following research topics:

- Inverse problems
- Signal processing
- Machine learning
- Graphical and network models
- Dynamical systems models
- Pattern theory
- Neurogenetics
- Functional and structural imaging
- Geometric and topological methods

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