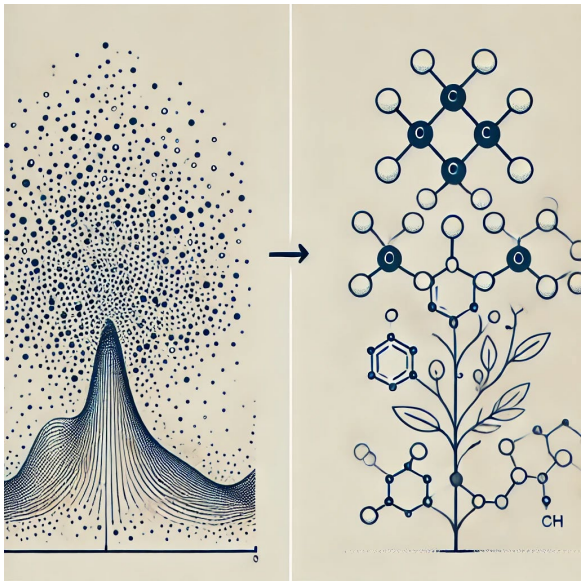

Mathematics of Generative AI

Math 496T – Special Topics, Spring 2025

Instructor: Dr. Michael Chertkov

Course Overview:
This experimental course bridges classical applied mathematics and the modern world of AI. Designed for motivated juniors in STEM fields (mathematics, physics, astronomy, engineering), the course delves into the mathematical foundations that drive today's AI revolution.

Prerequisites: Linear Algebra (Math 215 or Math 310 or Math 313) with a grade of A or B; Vector Calculus (Math 223) with a grade of A or B; and Differential Equations (Math 254 or Math 355).

Why Take This Course?

- Explore how core mathematical concepts, like linear algebra, differential equations and stochastic processes, fuel advances in AI.
- Learn about AI through study of the recent publications on generative AI and related.
- Prepare for further research and development careers in Sciences empowered by AI.

Key Features:

- **Focus on Generative AI**: Understand diffusion models and stochastic processes central to the future of AI technologies.
- **Multidisciplinary Approach**: Connect mathematics with its applications across physical, engineering, and life sciences.

Join us and become part of the next generation of researchers in mathematical AI innovation!