

Course Announcement:

Strong Interactions at High Energy

880J20, Spring 2005,

MW 10:30 am - 12:18 pm, Smith 1186,

Instructor: Prof. Yuri Kovchegov

Quantum Chromodynamics (QCD) is widely accepted as the theory of strong interactions, being the origin of most of the visible mass around us and of the 2004 Nobel Prize. Still it is mostly an enigma. At several accelerators worldwide people study high energy scattering, achieving densities higher than anywhere else on the planet: paradoxically enough, there QCD becomes *simpler*! We will discuss this and other interesting phenomena:

- Parton Model, DGLAP Evolution Equation: how can one believe in quarks and gluons without ever seeing them?
- McLerran-Venugopalan Model, Classical Fields: can some of the physics deep in the quantum world be classical?
- BFKL Evolution, Nonlinear JIMWLK and BK Equations, Unitarity: why it is hard sometimes to conserve probability.
- Deep Inelastic Scattering and Heavy Ion Collisions: so different, yet so similar.
- Diffraction: can you drop an egg and *not* break it?

First class is Monday, March 28, 2005.