1023-60-4   **Andrei Okounkov***, Fine Hall, Washington Road, Princeton, NJ 08544. *Limit shapes, real and imagined, III. Instantons, and How Random Surfaces Count Them.*

Instantons are connections that minimize the energy for given topology. They play a very prominent role in gauge theory. Nekrasov proposed a mathematical definition of the partition function of supersymmetric gauge theories in terms of instantons and made a striking conjecture relating it to the work of Seiberg and Witten. In the third lecture, I will explain how it indeed works out and where the limit shapes come into the picture. (Received September 26, 2006)