

# Lecture 5

## Preliminary list of topics

- (1) Derivation of the Stirling formula by the Laplace method. Gamma-function.
- (2) Combinatorics.  
Permutations.  
Binom.  
Distribution of classical particles over boxes.
- (3) Binomial distribution & its limits.  
Poisson distribution & normal distribution. Classical random graphs.
- (4) Limiting theorems of probability theory
  - (a) The law of big numbers,
  - (b) The central limiting theorem.