

# *Probability*

## **Theoretical Subjects, First Part**

1. Probability of an union (General inclusion-exclusion formula)
2. Probability of an intersection (the multiplicative rule)
3. Total probability formula
4. Bayes' formula
5. Events mutually and pairwise (or jointly) independent; counterexamples
6. Definition of a Random Variable; discrete r.v.
7. Distribution (law); probability mass function
8. Cumulative Distribution Function; the case of discrete r.v.
9. Independence of Random Variables
10. Moments of a r.v.; transfer formula
11. Discrete Uniform Distribution
12. Bernoulli Distribution
13. Binomial Distribution
14. Geometric Distribution
15. Negative Binomial Distribution
16. Poisson Distribution
17. Discrete Random Vectors: Distribution (law); Cumulative Distribution Function; Marginal Distributions; independence