物質階層融合科学特別講義 BIV（修士）
物質階層融合科学特殊講義 BIV（博士）

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# A gentle introduction to random graph theory

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Abstract for the series:
For the last twenty years, random graph theory is one of the most rapidly evolving parts of combinatorics with many applications to graph theory, computer science, discrete geometry and combinatorial number theory. In this short series of lectures, we give a very brief introduction to    results and methods of this important area of discrete mathematics.

*Lecture 1: January 20(Wed), 15:00～16 :00*
*Random graph theory: basic definitions and methods.*
  In this lecture we introduce the notion of a random graph and the random graph process and present some basic methods used to study this objects (the first moment method, the method of moments）

*Lecture 2: January 20(Wed), 16:00～17 :00*
*The phase transition*
  We describe one of the most spectacular phenomenon   in the evolution of the random graph -- the phase transition – and   explain how to study the critical behavior using   branching processes.

*Lecture 3: January 22(Fri), 15:00～16 :00*
*Martingales and the differential equations approach*
  We recall Azuma's inequality for martingales, and its use in random graph theory. We show how to use it to attack some of the problems which emerged in the first two lectures.

*Lecture 4: January 22(Fri), 16:00～17 :00*
*Large deviation inequalities*
  We describe some other large deviation inequalities used in random graph theory and discuss its advantages and limitations.