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***Perfect Matchings in Bipartite Random Graphs and Multiple Wiener-Ito
Integral***

Some counting problems for perfect matchings in bipartite random graphs can be embedded in a setting of generalized permanent of random matrices. In the lecture asymptotic properties of such objects will be presented for rectangular matrices when row and column numbers may both increase to infinity. It appears that, similarly as in the case of U-statistics (Dynkin, Mandelbaum, 1983), the limiting behavior of generalized random permanents is that of a sum of appropriate multiple Wiener-Ito integrals. This result will be applied to specific counting issues for perfect matchings. The lecture covers some of the results obtained jointly with G. Rempala and recently published in our small monograph: Rempala, G., Wesolowski, J., "Symmetric Functionals of Random Matrices and Random Matching Problems" (Springer, 2008).