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**Grzegorz A Rempala\*** ([math@louisville.edu](mailto:math@louisville.edu)), Department of Mathematics, NS Building rm 328 Belknap Campus, University of Louisville, Louisville, KY. *Symmetric functionals on random matrices and matchings in bipartite random graphs.*

Consider a rectangular  $m$  by  $n$  matrix of iid elements. The talk shall be concerned with the asymptotic behavior (as  $m, n$  increase) of certain class of the row-column symmetric functionals of iid matrices which were called by Cauchy in his famous memoir on determinants "permanently symmetric". It turns out that the class of such functionals includes some well know sub-classes of symmetric functions like e.g.,  $U$ -statistics. Due to the duality between random matrices and bipartite random graphs, the problem may be also described in terms of the functions of the matchings in the corresponding random graphs. Such an interpretation is of interest since it allows for translating our limiting results into statements about some classical NP-hard counting problems involving matchings in bipartite graphs. The talk shall offer various other examples of applications starting from the classical Dynkin-Mandelbaum result on the limits of  $U$ -statistic. (Received January 10, 2007)