

**BETWEEN “VERY LARGE” AND “INFINITE”: THE ASYMPTOTIC
REPRESENTATION THEORY**

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Abstract: I illustrate the historical roots of the theory which I called later “Asymptotic Representation Theory” – the theory which can be considered as a part functional analysis, representation theory, and more general – probability theory, asymptotic combinatorics, the theory of random matrices, dynamics, etc. The first and very concrete example is a remarkable (and forgotten) paper by J. von Neumann, which I try here to connect with the modern theory of random matrices; the second example is a quote of an important thought of H. Weyl about the theory of symmetric groups. In the last section I give a short review of the ideas of the asymptotic representation theory, which was developed starting from the 1970s, and now became very popular. I mention several important problems, and give a list (incomplete) of references. But the reader must remember that this is just a synopsis of the “baby talk”.

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