Some special functions of matrix integral type and quantum Painlevé equations

01.03 **Hironobu Kimura**
(*Graduate school of Science and Technology, Kumamoto University, Japan*)
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Abstract: We consider several special functions defined by matrix integrals on Hermitian matrix space, namely, analogues of Gauss hypergeomeric, Kummer's confluent hypergeometric, Bessel, Hermite-Weber and Airy function. We would like to discuss the relation of these functions of matrix integral type with some semi-classical orthogonal polynomials and with the polynomial solutions of quantum Painlevé equations.