

Some results in asymptotics inspired by Nico Temme

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The following four topics have in common that they involve uniform asymptotic expansions and/or special functions. The first part of the talk is on a uniform asymptotic expansion of Fermi-Dirac integrals. This was joint work with Nico Temme. In the second problem we discuss the asymptotics of an integral that originates from a uniformly accelerating plate problem. The third topic deals with the asymptotics of a finite sum that originates from mathematical finance. Finally, we give exponentially-improved asymptotic expansions for solutions of linear difference equations, and apply the results to the Gauss hypergeometric function.