Uniform asymptotic approximations for linear differential equations with a bounded uniformity parameter

Adri B. Olde Daalhuis
The University of Edinburgh, UK
Email: A.OldeDaalhuis@ed.ac.uk

Typically when one studies uniform asymptotic approximations for differential equations, the asymptotics is for a large free parameter, say λ, and the approximations are valid for the differentiation variable, say z, near a critical point. Here we will discuss the opposite case. The differentiation variable is large, and the approximations are supposed to hold for the free parameter near a critical value. Note that in difference equations this is the typical situation, since we normally study the large n asymptotics.