

# Plancherel-Rotach asymptotic expansion for some polynomials from indeterminate moment problems

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## **Abstract**

We study the Plancherel–Rotach asymptotics of four families of orthogonal polynomials, the Chen–Ismail polynomials, the Berg–Valent polynomials, the Conrad–Flajolet polynomials I and II. All these polynomials arise in indeterminate moment problems and three of them are birth and death process polynomials with cubic or quartic rates. We employ a difference equation asymptotic technique due to Wang and Wong. Our analysis leads to a conjecture about large degree behavior of polynomials orthogonal with respect to solutions of indeterminate moment problems.

This is joint work with Mourad E.H. Ismail and Xiang-Sheng Wang.