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Turning point theory for q -difference equations

We develop a q -difference equation approach to study turning points of q -difference equations. The motivation is to develop Plancherel-Rotach asymptotics of q -orthogonal polynomials. Our method for q -difference equations is an analogue to the turning point problem for Hermite differential equations. This work is joint with Chun-Kong Law from National Sun Yat Sen University in Taiwan.