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**Roderick Sue Cheun Wong\*** (mawong@cityu.edu.hk) and **Xiang-Sheng Wang**. *Asymptotics of Racah polynomials*. Preliminary report.

Within the Askey scheme of hypergeometric orthogonal polynomials, Racah polynomials stay on the top of the hierarchy and they generalize all of the discrete hypergeometric orthogonal polynomials. In this talk, we investigate asymptotic behaviors of Racah polynomials with varying parameters when the polynomial degree tends to infinity. Using the difference equation technique developed in our earlier papers, we obtain an asymptotic formula in the outer region via ratio asymptotics and then derive asymptotic formulas in the oscillatory region via a matching method. Our asymptotic formulas are explicitly given in terms of the polynomial degree, variable and parameters, using elementary functions such as logarithmic, exponential and rational functions. By taking limits, our results also yield asymptotic formulas for orthogonal polynomials in the lower hierarchy of the Askey scheme such as Hahn polynomials and Krawtchouk polynomials. (Received September 17, 2015)