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Jacob Stordal Christiansen* (stordal@maths.lth.se), **Barry Simon** and **Maxim Zinchenko**. *Residual Polynomials*.

Let $E \subset \mathbb{R}$ (or \mathbb{C}) be a compact, not finite, set and fix a point $x_0 \notin E$. We denote by $R_n := R_{x_0, n}^{(E)}$ the n th residual polynomial of E normalized at x_0 , that is, the degree at most n polynomial with $R_n(x_0) = 1$ which minimizes the sup norm on E . Such polynomials appear in numerical analysis and have applications, e.g., to Krylov subspace iterations.

In the talk, I'll present upper (and lower) bounds on the norms $\|R_n\|_E$ and strong (aka Szegő–Widom) asymptotics of $R_n(z)$. Several examples will also be discussed. The talk is based on joint work with B. Simon and M. Zinchenko dedicated to the memory of Dick Askey. (Received September 14, 2020)