Poncelet's Theorem and Orthogonal Polynomials

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Poncelet's Theorem is one of the most beautiful and well known results from projective geometry. In the last few decades, the relationship between Poncelet's Theorem and other mathematical object, such as Blaschke products or numerical range of completely non-unitary contractions, has been the focus of extensive research. Recently, another connection, now with the theory of orthogonal polynomials on the unit circle has been revealed. These interconnections allow us to prove several new results, to interpret the existing theory in a new context, and also to understand further connections with other areas of geometry and analysis.

This is a joint work with M. Hunziker, T. Poe, and B. Simanek.