

Flow of the zeros of polynomials under iterated differentiation

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Assume we have a sequence of polynomials whose asymptotic zero distribution is known. What can be said about the zeros of their derivatives? Especially if we differentiate each polynomial several times, proportional to their degree? This simple-to-formulate problem has recently attracted the attention of several researchers. The problem and its solution methods have exciting connections with free probability, random matrices, approximation theory on the complex plane, and nonlinear PDE, such as the inviscid Burgers equation.