On the regularity of roots of polynomials

We show that the roots of a smooth curve of monic polynomials admit parameterizations that are locally absolutely continuous. More precisely, any continuous choice of the roots is locally absolutely continuous with $p$-integrable derivatives, uniformly with respect to the coefficients, where $p > 1$ depends only on the degree of the polynomial. This solves a problem posed by S. Spagnolo over one decade ago in connection with the solvability of certain systems of partial differential equations. Joint work with Adam Parusinski.