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Fluctuations in random complex zeroes. Asymptotic normality revisited.

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We show that the linear statistics of random complex zeroes are asymptotically normal when the test-function belongs to C^a with any $a > 1$, or when the test-function is bounded and the variance grows as a power. The latter occurs for the indicator function of any bounded measurable set in the plane. These results are relatively sharp : for any $a < 1$, there are test-functions in C^a with abnormal fluctuations of linear statistics, and there are unbounded test-functions with power growth of the variance and with abnormal fluctuations of linear statistics.

We also find asymptotic bounds for the variance of the linear statistics valid for arbitrary test-functions that are integrable and square-integrable.

This is a joint work with M. Krishnapur and F. Nazarov.