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The distribution of the zeros of $\zeta(s)$, of $\zeta'(s)$ and the non-existence of Siegel zeros

Denote by ζ the Riemann zeta-function. All the non-trivial zeros of ζ' lie to the right of the half-line if and only if the Riemann Hypothesis is true. Assuming the Riemann Hypothesis, the finer distribution of the zeros of ζ' is not chaotic and seems to depend, on average, on spacings between the consecutive zeros of ζ. We establish a conjecture of Farmer and Ki asserting this finer relation. Farmer and Ki's conjecture is interesting because of its relevance to the class number problem, and the non-existence of Siegel zeros. Time permitting we will also discuss some recent related probabilistic results.