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Large gaps between zeros of Dedekind zeta-functions of quadratic number fields. Preliminary report.

Let K be a quadratic number field with discriminant d . The Dedekind zeta-function attached to K can be expressed by $\zeta_K(s) = \zeta(s)L(s, \chi_d)$ for $s \neq 1$, where $\zeta(s)$ is the Riemann zeta-function, the character χ_d is the Kronecker symbol associated to d , and $L(s, \chi_d)$ is the corresponding Dirichlet L-function. Using the mixed second moments of $\zeta_K(\frac{1}{2} + it)$ and its derivatives, we prove the existence of gaps between consecutive zeros of $\zeta_K(s)$ on the critical line which are much larger than the average spacing. We also conjecture a more precise main term for these moments using a modification of the recipe of Conrey, Farmer, Keating, Rubenstein, and Snaith combined with ideas of Hughes and Young. (Received August 12, 2012)