

Riemann’s functional equation, Epstein zeta-functions, and Speiser’s correspondence

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Two hundred years ago Riemann was born. In his path-breaking paper from 1859 he proved the functional equation of the (Riemann) zeta-function and his several unproven claims led to a better understanding of the distribution of prime numbers. Only his famous “Riemann Hypothesis” (that all complex zeros of his zeta-function lie on the critical line) is not yet solved. In the talk we consider the so-called Epstein zeta-functions, satisfying a certain Riemann-type functional equation, and discuss their zero-distributions. For some of these zeta-functions a variation of “Riemann Hypothesis” is expected to hold, for others definitely not (for which we will give various explicit examples). We sketch a proof of a variant of Speiser’s celebrated correspondence for Epstein zeta-functions (and their derivatives). Finally, we touch questions about the distribution of values of these zeta functions and “universality”.

This is joint work with my Rasa Steuding.