Online Number Theory Seminar

22 March 2024. – 17:00-17:50

J. Pintz: Density theorems for the zeros of the Riemann and Dedekind zeta functions

Zero-density theorems play an important role in the theory of Riemann and Dedekind zeta functions. I will present a proof for a general zero-density theorem valid for a class of Dirichlet series which include as special cases among others the Riemann zeta-function and Dedekind zeta-functions. Due to the application of an idea of Gábor Halász these results give sharper bounds in the vicinity of the boundary line $\mathrm{Re}s = 1$, similarly to the pioneering theorems of Gábor Halász and Paul Turán. If applied to algebraic number fields of degree n, they improve earlier results in some ranges for all $n > 2$ (and for $n = 1$, the case of the Riemann zeta function.