



## Mathematisches Kolloquium

# Is there a prime number theorem in algebraic groups?

**Sprecher: Prof Dr. Gunther Cornelissen**

Eingeladen von den Doktoranden der Mathematik

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The prime number theorem reveals something simple about the otherwise difficult world of prime numbers: the probability of finding a prime number amongst the first  $N$  integers is approximately  $\log(N)$  (and the error relates to the Riemann hypothesis). In the talk, we will first explain a similar statement about counting irreducible polynomials modulo a prime number  $p$ , amongst all polynomials of a given degree modulo  $p$ . Then we will interpret this result as a statement about a dynamical system: it says something about the orbit distribution under iteration of a specific map ("Frobenius") on a specific algebraic group ("the additive group"). We then study the generalisation to arbitrary endomorphisms of arbitrary algebraic groups. The pictures of orbit size distribution sometimes look like those of a non-ergodic system. If the prime number theorem fails, can we rescue the Riemann hypothesis?

**Der Vortrag ist für ein breites Publikum geeignet**