THE SCHINZEL-ZASSENHAUS CONJECTURE AND DIMITROV'S METHOD

An *algebraic integer* is a complex number $\alpha \in \mathbb{C}$ which is a root of a monic irreducible polynomial in $\mathbb{Z}[X]$. The complete set of zeros of such a polynomial is a *conjugate set of algebraic numbers*, and the distribution of sets like this is an interesting topic in Number Theory. In particular, bounding the maximum absolute value of elements in these sets from below has been studied intensively over the years.

In 1965, Schinzel and Zassenhaus were not able to prove the following:

Conjecture (Schinzel-Zassenhaus Conjecture)**.** *There exists an absolute constant $C > 0$ such that for every non-cyclotomic monic irreducible polynomial $P \in \mathbb{Z}[X]$ of degree d with roots $\alpha_1, \ldots, \alpha_d \in \mathbb{C}$, the following inequality holds:*

$$\max_{1 \leq i \leq d} |\alpha_i| > 1 + \frac{C}{d}.$$

The above conjecture was proved in 2019 by Dimitrov and extended to the relative case.

In this talk we will introduce the relevant notions and sketch Dimitrov's proof. Then, we will discuss the relative case and introduce the application of Dimitrov's method to Arithmetic Dynamics.