Exposé court

67 *Quintic number fields defined by* $x^5 + ax + b$

Kaur, Sumandeep (Panjab university, Chandigarh)

Let $K = \mathbb{Q}(\theta)$ be an algebraic number field with θ a root of an irreducible quintic polynomial of the type $x^5 + ax + b \in \mathbb{Z}[x]$. Let A_K stand for the ring of algebraic integers of K. If ind θ denotes the index of the subgroup $\mathbb{Z}[\theta]$ in A_K and $i(K)$ stand for the index of the field K defined by

$$i(K) = \gcd\{\text{ind}\ \alpha \mid K = \mathbb{Q}(\alpha),\ \alpha \in A_K\}.$$

A prime number p dividing $i(K)$ is called a prime common index divisor of K. In this talk, for every rational prime p, we provide necessary and sufficient conditions on $a,\ b$ so that p is a common index divisor of K. In particular, we give sufficient conditions on $a,\ b$ for which K is non-monogenic.

Bibliography

[1] A. Jakhar, S. Kaur, and S. Kumar. Common index divisor of the number fields defined by $x^5 + ax + b$. *Proceedings of the Edinburgh Mathematical Society*, 65(4):1447–1461, 2022.