

**A GENERALIZATION OF LLL LATTICE BASIS REDUCTION OVER
IMAGINARY QUADRATIC FIELDS**

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ABSTRACT. In this paper we generalize LLL lattice basis reduction defined by Lenstra, Lenstra, and Lovász. We consider \mathcal{O}_F -lattice, where \mathcal{O}_F is the ring of integers in algebraic number field F . We can prove that basic properties of reduced basis can hold over imaginary quadratic fields. We can reveal existence of a least positive element over other algebraic number fields.

Key words and phrases. basis reduction, LLL-algorithm, imaginary quadratic fields.