POWER INTEGRAL BASES IN CUBIC RELATIVE EXTENSIONS

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Abstract. We give an efficient algorithm for computing relative power integral bases in cubic relative extensions. The problem leads to solving relative Thue equations as described by [Gaál and Pohst 1999] using the enumeration method of [Wildanger 1997].

The article is illustrated by examples of relative cubic extensions of quintic and sextic fields which emphasizes the power of the method. This is the first case that unit equations of 12 unknown exponents are completely solved. The experiences of our computations may be useful for other related calculations, as well.