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Relative regulators of number fields. (English) [Zbl 0945.11022](#)

Invent. Math. 135, No. 1, 115-144 (1999).

Let L be an algebraic number field. *R. Zimmert* [*Invent. Math.* 62, 367-380 (1980; [Zbl 0456.12003](#))] found positive constants c_0, c_1 such that the regulator $\text{Reg}(L)$ satisfies

$$\text{Reg}(L) \geq c_0 c_1^{[L:\mathbb{Q}]}$$

A.-M. Bergé and *J. Martinet* [*Sémin. Théor. Nombres, Paris/Fr.* 1987-88, *Prog. Math.* 81, 23-50 (1990; [Zbl 0699.12014](#))] defined a relative regulator associated to an extension L/K , which is essentially the ratio $\text{Reg}(L)/\text{Reg}(K)$. They asked whether a result analogous to that of Zimmert holds for the relative regulator. The present authors derive such a result, i.e., they prove the following

Main Theorem: There exist positive absolute constants d_0, d_1 such that for any extension L/K of number fields we have

$$\text{Reg}(L)/\text{Reg}(K) \geq (d_0 d_1^{[L:K]})^{[K:\mathbb{Q}]}$$

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MSC:

[11R27](#) Units and factorization

[11R47](#) Other analytic theory

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Keywords:

relative regulator; theta series

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