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Imbrications entre le théorème de Mason, la descente de Belyi et les différentes formes de la conjecture (abc)

par Michel LANGEVIN

Abstract. Let $A, B, C = A + B$ be relatively prime polynomials with complex coefficients and maximal degree D (>0). The Mason's theorem implies that $D + 1$ does not exceed the number $r(ABC)$ of distinct roots of the product ABC. Similarly, let $A, B, C = A + B$ be relatively prime positive integers and $S = \max(A, B, C)$. Let $r(ABC)$ be the product of all primes dividing the product ABC. The *abc*-conjecture implies that, for any $\varepsilon > 0$, there exists $C_\varepsilon > 0$ such that the inequality: $r(ABC) \geq C_\varepsilon S^{1-\varepsilon}$ holds for any triple $A, B, C = A + B$ of integers. The cases of equality $r(ABC) = D + 1$ for polynomials $A, B, C = A + B$ are linked to numerous results in number theory; triples of integers generated by these cases lead, by using the *abc*-conjecture, to optimal minoration of $r(G(A, B))$ (where $G \in \mathbb{Z}[X, T]$ is a form and A, B are coprime integers) ; in these polynomial constructions of integers, the role of the Mason's theorem is crucial.

Michel Langevin
Laboratoire A2X
Institut Mathématiques Bordeaux
351 cours de la Libération
F-33450 Talence Cedex
E-mail : `lgv@math.u-bordeaux.fr`