Computing the Summation of the Möbius Function

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Abstract

We describe an elementary method for computing isolated values of $M(x) = \sum_{n \leq x} \mu(n)$, where μ is the Möbius function. The complexity of the algorithm is $O(x^{2/3}(\log\log x)^{1/3})$ time and $O(x^{1/3}(\log\log x)^{2/3})$ space. Certain values of $M(x)$ for x up to 10^{16} are listed: for instance, $M(10^{16}) = -3195437$.