

Title (en)
MULTIPLICATION IN A FINITE FIELD

Title (de)
MULTIPLIKATION IN EINEM ENDLICHEN FELD

Title (fr)
MULTIPLICATION DANS UN CHAMP FINI

Publication
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Application
EP 04735781 A 20040602

Priority

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Abstract (en)
[origin: WO2004112307A2] An apparatus for performing a multiplication in a finite field $F_q = \{0, 1, \alpha, (\alpha^2, \dots, \alpha^{q-2}), \dots\}$ or, in an index representation, $F_q = \{x_0, x_1, \dots, x_{q-1}\}$ where each element x_j of the field is represented by a respective index j indicated as $j=i(x_j)$. A memory 410 includes a logarithm table L 416 with at least q entries $L[j] = \log_{\alpha}(x_j)$, for $j=0, \dots, q-1$ and an exponent table E with a first part 412 with respective entries $E[j] = i(\alpha^j)$ for $j=0, \dots, q-2$ and a second part 414 immediately subsequent to the first part with respective entries $E[j+q-1] = (a < j >)$ for $j=0, \dots, q-3$. A processor 420 provides as the outcome of the multiplication of non-zero elements $x, y \in F_q$ an index retrieved from a table entry $E[L[i(x)] + L[i(y)]]$ in the memory.

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