A Probabilistic Analysis of Bitcoin attacks

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$$\frac{(q-1)(4\,q^2-3\,q-2)}{(2\,q-1)^4}-\frac{(q-1)(4\,q^2+2\,q-7)}{(2\,q-1)^6 n}-\frac{(q-1)(24\,q^4-12\,q^3-58\,q^2+29\,q+18)}{(2\,q-1)^8 n^2}$$

$$-\frac{(q-1)(144\,q^6-216\,q^5-348\,q^4+444\,q^3+328\,q^2-312\,q-41)}{(2\,q-1)^{10} n^3}$$

$$-\frac{(q-1)(864\,q^8-2160\,q^7-1704\,q^6+4956\,q^5+4632\,q^4-9972\,q^3+1586\,q^2+1711\,q+88)}{(2\,q-1)^{12} n^4}+O(\frac{1}{n^5})$$