ETUDE ON NONTRIVIAL COLLATZ CYCLES

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Nontrivial Collatz cycles correspond to the expression (1.1) or (1.2):

$$\frac{(3a+1)(3b+1)(3c+1)}{abc} = 2^h \quad (1.1) \qquad \frac{(A+1)(B+1)(C+1)}{ABC} = \frac{2^h}{3^m} \quad (1.2)$$

The central part of transformation (2) from expression (1.2) corresponds to the sequence (3n+1) for negative numbers.

$$\frac{(A`+1)(B`+1)(C`+1)}{A`B`C`} = \frac{ABC}{(A-1)(B-1)(C-1)} \equiv \frac{3^m}{2^h} \quad (2)$$

The sequence (3n+1) for negative numbers actually has nontrivial cycles, accordingly of the central part of expression (2) correlates with the series $\frac{3^m}{2^h}$*. The left part of expression (2) correspond to the Collatz sequence for even numbers.*

$$\frac{3^m}{2^h} \equiv \frac{(A`+1)(B`+1)(C`+1)}{A`B`C`} \not\equiv \frac{ABC}{(A+1)(B+1)(C+1)} \quad (3)$$

Replacing the left-hand side of the expression (2) of even numbers with odd ones (Collatz sequence) leads to non performing of correlation with the series $\frac{3^m}{2^h}$ *and the absence of non-trivial cycles (3).*