On $p2^n$ blocker conjecture and $R2$ function

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This paper covers a conjecture concerning the character of $p2^n$ for prime $p$, $n ∈ N$.

1 Definitions

**Definition 1.** For natural $n > 1$, we have: $n = \prod_{i=1}^{k} p_i^{e_i}$. $\mu$ function is defined as $\Omega(n) = \sum_{i=1}^{k} e_i$. From definition we have: $\forall x, y ∈ N \Omega(xy) = \Omega(x) + \Omega(y)$ and $\forall x, y ∈ N \Omega(x^y) = y\Omega(x)$.

**Definition 2.** $\Xi$ matrix is the matrix where each row contains all the numbers $i ∈ N$-th column contains all consecutive numbers $n$ of $\Omega(n) = i$.

$$
\Xi = \begin{bmatrix}
2 & 4 & 8 & 16 & \ldots & 2^k \\
3 & 6 & 12 & 24 & \ldots & 3 \cdot 2^{k-1} \\
5 & 9 & 18 & 36 & \ldots & 5\delta(k-1) + 9 \cdot 2^{(k-2)} \\
7 & 10 & 20 & 40 & \ldots & 7\delta(k-1) + 10 \cdot 2^{(k-2)} \\
\ldots & \ldots & \ldots & \ldots & \ldots & \ldots
\end{bmatrix}
$$

**Definition 3.** From $\Xi$ matrix, one can find R-sequence, i.e. sequence $r(n)=3,9,10,27,28,30,\ldots$ such that $\forall x ∈ N \exists nx = r(n), m ∈ N : \forall z ∈ N \Xi[n + z, m] = 2\Xi[n + z - 1, m]$

**Definition 4.** $\forall p, R2(p) = n$ such that $p2^n$ is a blocker.

2 $p2^n$ Blocker Conjecture

$\forall p, \exists n ∈ N p2^n$ is a blocker and there is exactly only one such $n$.

3 References