Notes about Prime Constellations

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1 Basic Definitions

Definition 1. *A Constellation is a function:* $\chi : \mathbb{N} \to \mathcal{P}(\mathbb{N})$

$$\psi : \mathbb{N} \to \mathbb{N} \tag{1}$$

$$M_\chi^\psi(0) \coloneqq M_0 \coloneqq \{\, 2, 3, 4, 5, \dots \,\} \tag{2}$$

$$\begin{aligned} M_\chi^\psi(k) \coloneqq &M_\chi^\psi(k-1) \setminus \chi\left(\psi(k) \cdot M_0\right) \\ = &M_\chi^\psi(k-1) \setminus \left(M_\chi^\psi(k-1) \cap \chi\left(\psi(k) \cdot M_0\right) \right) \end{aligned} \tag{3}$$

2 Derivation

For $\chi = \mathrm{id}$:

$$\begin{aligned} M_\chi^\psi(k-1) \cap \chi\left(\psi(k) \cdot M_0\right) &= M_\chi^\psi(k-1) \cap \left(\psi(k) \cdot M_0\right) \\ &= \psi(k) \cdot M_\chi^\psi(k-1) \end{aligned} \tag{4}$$

For $\chi(t) = \{\, t-2, t \,\}$:

$$\begin{aligned} M_\chi^\psi(k-1) \cap \chi\left(\psi(k) \cdot M_0\right) &= M_\chi^\psi(k-1) \cap \chi\left(\psi(k) \cdot M_0\right) \\ &= ??? \end{aligned} \tag{5}$$

Definition 2. *Goldbach-n-prime*
For n even, a number $p < n$ is a Goldbach-n-prime iff both p and $n-p$ are prime

Conjecture 1 (The Goldbach-Conjecture)**.** *For every $n \geq 4$ there exists at least one Goldbach-n-prime*

For $n \in \mathbb{N}$ and $\chi(t) = \{\, t, n-t \,\}$:

$$\begin{aligned} M_\chi^\psi(k-1) \cap \chi\left(\psi(k) \cdot M_0\right) &= M_\chi^\psi(k-1) \cap \chi\left(\psi(k) \cdot M_0\right) \\ &= \end{aligned} \tag{6}$$

3 Results

Definition 3.

$$\Psi_{\chi}^{\psi} = \lim_{k \to \infty} M_{\chi}^{\psi}(k) \tag{7}$$

Lemma 1.

$$\mathbb{P} = \Psi_{\mathrm{id}}^{\pi^{-1}} \tag{8}$$

4 Notes

2	3		5		7				
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