[Nicolas Douillet]

Introduction and state of the art : *twin prime conjecture, (to prove)*

There exists infinity of twin prime numbers, that is to say couples (p_A, p_B) of prime numbers premiers such that there exists one unique $n \in \mathbb{N}^* \setminus \{1\}$, $p_A = n-1$, et $p_B = n+1$, or also $p_B - p_A = 2$,which can then also be qualified as ‘2-twins’.

Extension of twin prime conjecture : *rephrased Polignac conjecture*

Extending this definition, we conjecture there exists like this infinity of prime numbers ‘4-twins’, ‘6-twins’,…, ‘2n-twins’, that is to say sets of couples (p_A, p_B) of prime numbers such that $p_B - p_A = 2n$, with $n \in \mathbb{N}^* \setminus \{1\}$.

Each one of these sets may also be more precisely called ‘prime brother numbers at the distance 2n’ set. Then, for $n \in \mathbb{N}^*$, there exists an infinity of prime brother numbers at the distance 2n sets.

The number 2, the only and unique even prime number can then be defined as its own ‘0-twin’ or ‘brother at the distance 0’.

Nicolas conjecture : *on the reunion of n ensembles of « prime brother numbers at the distance 2n »*

The reunion of the n sets of ‘prime brother numbers at the distance 2n’, $n \in \mathbb{N}^*$ and the number 2 forms the prime numbers set $\mathbb{P}$.

This reunion is also the reunion of the intersection of the n sets of de ‘prime brother numbers at the distance 2n’, $n \in \mathbb{N}^*$ and the number 2.