

## CHAPTER 8

### The Goldbach conjecture

#### 8.1. Introduction.

The global Riemann hypothesis and its generalisation for L-series, implies a new proof of the weak Goldbach theorem. This theorem, sometimes called Vinogradov's three prime theorem, states that every odd number greater than 5 is the sum of three primes.

#### 8.2. The weak Goldbach theorem.

The weak Goldbach theorem was proved unconditionally by Harald Helfgott in papers in 2012 and 2013 [2He12], [2He13a], [2He13b]. However, it has been known since 1997 [DERZ97] that the generalised Riemann hypothesis implies the weak Goldbach theorem for all numbers.  $\square$