

Primitive weird numbers with several distinct prime factors

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A positive integer n is a weird number if n is abundant but cannot be expressed as a sum of its own proper divisors. A primitive weird number is a weird number that is not a multiple of another weird number. In 1972 Benkoski and Erdős raised some conjectures about weird numbers, which are still unsolved: are there infinitely many primitive weird numbers? Is there any odd weird number?

In this talk we show that these problems are related the existence of primitive weird numbers with several distinct prime factors. A few dozens of primitive weird numbers with more than three primes in their factorization are known in literature. On one hand, we will show some recent techniques to provide very rapidly primitive weird numbers with up to 16 distinct prime factors, and on the other hand we give a lower bound for the number of distinct prime factors of an odd weird number.