

Online Number Theory Seminar

23 January 2026. – 17:00-17:50

F. Luca: Multiply Gleeful numbers.

For positive integers k and n let $f_k(n)$ be the number of ways of representing n as a sum of k powers of consecutive primes. A number is called *k-gleeful* if $f_k(n) > 0$ and *multiply gleeful* if $f_k(n) > 1$ or $f_k(n)f_{k'}(n) > 0$ for some positive integers $k < k'$. Under Schinzel's hypothesis H, we show that there are infinitely many positive integers n such that $f_2(n)f_4(n) > 0$. Under the same assumption we show that $\limsup_{n \rightarrow \infty} f_2(n) = \infty$. This gives a conditional proof of a stronger version of a conjecture of Moore and Sorenson from the preprint arXiv:2507.09012v1, July 2025.