1129-00-239   **James Maynard*** (`james.maynard@magd.ox.ac.uk`), Mathematical Institute, Oxford, OX1 6GG, United Kingdom. *Large gaps between prime numbers.*

What is the largest gap between prime numbers less than some large number X?

This simple question has a long and rich history in number theory, and is also important in real world computer algorithms. Despite this, our knowledge about large gaps between primes remains frustratingly limited!

Paul Erdős particularly popularised this question. He used to offer cash prizes for problems as a challenge to the mathematical community. The largest prize he ever offered ($10,000) was for improving our state of knowledge about large prime gaps. Erdős' challenge was solved in 2014 independently by two groups of researchers, but the general picture is still very mysterious.

I will describe the history of the problem, some of its outside relevance, and the new ideas behind the solution to Erdős' problem. (Received March 16, 2017)