

CENTRAL MICHIGAN UNIVERSITY

Department of Mathematics

GRADUATE STUDENT SEMINAR

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GAPS BETWEEN PRIMES (A LESSON FROM MSRI)

Tuesday, December 8 , 4:00 pm - 5:00 pm
Pearce Hall, Room 227

Prime numbers have fascinated mathematicians for more than two thousand years. Although many essential properties of prime numbers have been proven, there remains many open problems. One of these problems is known as the twin primes conjecture. The twin primes conjecture states that there exists infinitely many twin primes, that is, two primes that differ by 2.

The twin primes conjecture is a special case of Polignac's conjecture which states that for every positive integer k there are infinitely many prime gaps of size $2k$. Polignac's conjecture has not yet been proved or disproved for any specific value of k . In 2013, however, Yitang Zhang announced a proof that there are infinitely many prime gaps of size n for some $n < 70,000,000$. Later in the same year James Maynard, employing a different technique, reduced this bound to 600.

In this talk, we will discuss some background material for these conjectures, the results of Zhang and Maynard on gaps between primes and the underlying ideas and techniques they employed. This material was part of the Gaps Between Primes and Analytic Number Theory workshop at MSRI in Berkeley, CA in July, 2015.