AKSHAA VATWANI, Queen's University
A higher rank Selberg sieve

In May 2013, Yitang Zhang surprised the world by proving that there are infinitely many distinct primes p, q such that $|p - q| < 70 \times 10^6$. In November 2013, Maynard and Tao independently gave a simplified approach to Zhang's theorem, obtaining better numerical results. We will present a general higher rank Selberg sieve, an application of which derives the results of Maynard and Tao. We will also discuss another application of this sieve to the k-tuple conjecture, which improves upon a result of Heath-Brown. This is joint work with Professor Ram Murty.