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SELECTED MATHEMATICAL REVIEWS

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Despite much research of excellent quality, there have been few breakthroughs on the most natural elementary questions about the distribution of prime numbers in the last few decades. That situation has recently changed dramatically with two extraordinary breakthroughs, each on questions that the experts had held out little hope for in the foreseeable future.

Green and Tao proved that there are infinitely many k-term arithmetic progressions of primes using methods that are mostly far removed from mainstream analytic number theory. Indeed, their work centers around a most brilliant development of recent results in ergodic theory and harmonic analysis. Their proof is finished, in a natural way, by an adaptation of part of the proof of the other fantastic new result in this area, Goldston, Pintz and Yildirim's proof that there are "small" gaps between primes.

There is a rich historical background to Green and Tao's theorem stemming from several subjects, and the *Bulletin* has decided to highlight their work by reprinting the reviews of a few of the key papers that led up, in the progression of ideas, to Green and Tao's masterpiece.

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