

Erdős covering systems

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Abstract:

Since their introduction by Erdős in 1950, covering systems (that is, finite collections of arithmetic progressions that cover the integers) have been extensively studied, and numerous questions and conjectures have been posed regarding the existence of covering systems with various properties. In particular, Erdős asked if the moduli can be distinct and all arbitrarily large, Erdős and Selfridge asked if the moduli can be distinct and all odd, and Schinzel conjectured that in any covering system there exists a pair of moduli, one of which divides the other. In 2015, Hough resolved Erdős minimum modulus problem. In 2018, Balister, Bollobás, Morris, Sahasrabudhe and Tiba resolved Schinzel's conjecture and, in 2019, they resolved the Erdős and Selfridge problem in the square free case. In this talk, we discuss these results and present a gentle exposition of the methods used. This talk is based on joint work with Balister, Bollobás, Morris and Sahasrabudhe.