PRIMES, KNOTS AND KEIS - COLORING SQUARE-FREE INTEGERS

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The étale topology, and subsequently the étale homotopy type, were conceived and developed in order to borrow further and finer tools from topology, and apply them to better describe algebraic and arithmetic objects. Originally of interest in studying varieties over fields, an observation of Barry Mazur's interprets prime numbers as knots.

A kei, or involutive quandle, is a type of algebraic structure well-suited for producing numerical invariants of knots and links. Classically called colorings, these can be described as representations of the fundamental kei attached to a link. Emulating this notion in arithmetic geometry allows one to "color" square-free integers. This naturally gives rise to questions pertaining to the asymptotic average order of these coloring functions. In this talk we see the definition of kei-coloring integers. We form a conjecture about the asymptotic behavior of said functions, and see an example or two.

This is a joint work with Tomer Schlank.