

1086-11-1497      **Mark Kozek\*** ([mkozek@whittier.edu](mailto:mkozek@whittier.edu)), Department of Mathematics, Whittier College, Whittier, CA 90608-0834. *Recent undergraduate research on coverings*. Preliminary report.

We describe recent undergraduate research projects on coverings and their results (from the 2012 Cornell Summer Math Institute).

- For each base  $2 \leq b \leq 9$ , we show there are infinitely many composite numbers (coprime to  $b$ ) that remain composite after changing any digit in their base- $b$  expansion. For  $2 \leq b \leq 5$  we study an analogous problem for changing any two adjacent digits.
- An IRDCS is an incongruent restricted disjoint covering system, that is, an incongruent disjoint covering system on restricted interval. We study the general structure of IRDCSs, and we present some results on the 9-6-3 family of IRDCSs.
- Erdos' minimum modulus problem asks, given any natural number  $c$ , can one construct a covering system using distinct moduli greater than or equal to  $c$ ? We explore various ways to 'minimize' such coverings.

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