

1123-05-130

Jeremy L. Martin* (jlmartin@ku.edu). *Arithmetical structures on graphs and Catalan combinatorics*. Preliminary report.

Let G be a finite simple graph with vertex set $\{1, \dots, n\}$ and adjacency matrix A . An *arithmetical structure* on G is a pair (\mathbf{d}, \mathbf{r}) of positive integer vectors of length n such that the pseudo-Laplacian $\text{diag}(\mathbf{d}) - A$ is singular, with nullvector \mathbf{r} . In the cases that G is a path or a cycle, the set of arithmetical structures turns out to be rich with Catalan patterns. This is joint work with C. Alfaro, B. Braun, H. Corrales, S. Corry, L. García-Puente, D. Glass, N. Kaplan, L. Levine, H. Lopez, G. Musiker, and C. Valencia. (Received August 22, 2016)