WELL-COVERED TESSELLATIONS OF THE PLANE

Michael D. Plummer
Department of Mathematics
Vanderbilt University
Nashville, TN 37240
`michael.d.plummer@vanderbilt.edu`

Joint work with Art Finbow, Bert Hartnell and Richard Nowakowski

A graph is *well-covered* if every maximal independent set of vertices is also maximum. In other words, all maximal independent sets have the same cardinality. Determination of the independence number of such a graph is clearly trivial. On the other hand, the complexity of recognizing these graphs is unknown. It is, therefore, of interest to find large classes of provably well-covered graphs. In this talk, I will focus on well-covered plane triangulations and quadrangulations. Well-covered quadrangulations turn out to be rather easily characterized, but well-covered triangulations have proven much more difficult to handle. Only very recently in the last of four papers on the subject, we obtained a complete characterization and a polynomial recognition algorithm for the latter class. I will outline these results.