

ON CONNECTED IDENTIFYING CODES FOR INFINITE LATTICES

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An identifying code in a graph G is a set C of vertices of G such that the closed neighbourhood of every vertex contains a unique and non-empty subset of C . We say that C is a connected identifying code if $G[C]$ is connected. We prove that if a finite graph G on n vertices has maximum degree Δ , then any connected identifying code C satisfies $|C| \geq \frac{2n-2}{\Delta+1}$. We also show this bound is best possible and that the coefficient of n cannot be improved for Δ -regular graphs. We also show that the minimum density of connected identifying codes for the infinite triangular, hexagonal and square lattices are $\frac{1}{3}$, $\frac{1}{2}$ and $\frac{2}{5}$, respectively.

Joint work with Fabrício Benevides (ParGO - Universidade Federal do Ceará), Mitre Dourado (Universidade Federal do Rio de Janeiro), Rudini Sampaio (ParGO - Universidade Federal do Ceará) and Ana Silva (ParGO - Universidade Federal do Ceará).