

On (almost) 2- Y -homogeneous distance-biregular graphs

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Let Γ denote a bipartite graph with vertex set X and color partitions Y, Y' , and assume that every vertex in Y has eccentricity $D \geq 3$. For $z \in X$ and non-negative integer i , let $\Gamma_i(z)$ denote the set of vertices in X which are at distance i from z . Graph Γ is *almost 2- Y -homogeneous* whenever for all i ($1 \leq i \leq D - 2$) and for all $x \in Y, y \in \Gamma_2(x)$ and $z \in \Gamma_i(x) \cap \Gamma_i(y)$, the number of common neighbours of x and y that are at distance $i - 1$ from z is independent of the choice of x, y and z . In addition, if the above condition holds also for $i = D - 1$, then we say that Γ is *2- Y -homogeneous*.

In this talk, we will give necessary and sufficient conditions under which a distance-biregular graph Γ is (almost) 2- Y -homogeneous.

Keywords: distance-biregular graph, distance-regular graph, equitable partition.