

Automorphic Decompositions of Graphs

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Given graphs H and G , we say that H has a G -Decomposition if we are to partition the edge set of H so that for each part P of the partition, the subgraph of H induced by P is isomorphic to G . Let $I(\mathcal{D})$ be the intersection generated by such a decomposition. We say that \mathcal{D} is an automorphic decomposition of H with respect to G if $I(\mathcal{D}) \cong \mathcal{H}$. In this talk, we will show several examples of such a decomposition as well as give necessary conditions for their existence. This will allow us to give several regularity results regarding graphs that can host an automorphic decomposition.