Alpha Labelings of Snake Polyominoes and Hexagonal Chains

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An edge amalgamation of graphs $G_1$ and $G_2$ is a graph obtained by identifying an edge of $G_1$ with an edge of $G_2$. We show here that when both graphs admit $\alpha$-labelings, we can then perform the edge amalgamation of the two graphs to produce a new graph that also admits an $\alpha$-labeling. Snake polyominoes constitute a subfamily of the polyominoes introduced by Golomb, the hexagonal chains were studied by Balaban and Harary as models of cata-condensed hydrocarbon molecules. In both cases, every interior cell is adjacent to exactly two other cells and every vertex belongs to at most three or two cells, respectively. Alpha labelings of snake polyominoes and hexagonal chains are obtained using the edge amalgamation of blocks formed by at most four cells.

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