

STRUCTURAL PROPERTIES OF IDENTIFYING CODES: SOME RESULTS, CONJECTURES AND OPEN PROBLEMS

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Let G be a simple, undirected graph with vertex set V . For any vertex v of V and any integer r greater than or equal to 1, we denote by $B(r,v)$ the ball of radius r and centre v . A subset C of V is said to be an r -identifying code in G if the intersections of $B(r,v)$ and C , for v in V , are all nonempty and pairwise distinct. A graph G admitting an r -identifying code is called r -twin-free, and in this case the size of a smallest r -identifying code in G is denoted by $c(G)$. We study the following structural problem: let G be an r -twin-free graph, and G^* be a graph obtained from G by adding or deleting a vertex or an edge. If G^* is still r -twin-free, we compare the behaviours of $c(G)$ and $c(G^*)$, establishing results on their possible differences and ratios. We state also some conjectures or open problems dealing with these issues. More generally, we recall some conjectures or open problems related to identifying codes, based on joint works done with David Auger, Irène Charon, Iiro Honkala and Antoine Lobstein.