

Fix a plane drawing \tilde{G} of G . For simplicity we write G for \tilde{G} . If $|G| = 3$ then theorem ?? is trivial. So assume that $|G| \geq 4$. We inductively construct an isometric-path decomposition $P_1, \dots, P_k, k \geq 2$ such that:

- (*) for any component C of $G - \bigcup_{1 \leq j \leq k} P_j$ the boundary of the region of $R^2 \setminus G[P_1 \cup \dots \cup P_k]$ containing C is a cycle in G that has its vertices in exactly two paths from P_1, \dots, P_k .