Summary: In the spirit of peripheral subgroups in relatively hyperbolic groups, we exhibit a simple class of quasi-isometrically rigid subgroups in graph products of finite groups, which we call eccentric subgroups. As an application, we prove that if two right-angled Coxeter groups $C(\Gamma_1)$ and $C(\Gamma_2)$ are quasi-isometric, then for any minsquare subgraph $\Lambda_1 \leq \Gamma_1$, there exists a minsquare subgraph $\Lambda_2 \leq \Gamma_2$ such that the right-angled Coxeter groups $C(\Lambda_1)$ and $C(\Lambda_2)$ are quasi-isometric as well. Various examples of non-quasi-isometric groups are deduced. Our arguments are based on a study of nonhyperbolic Morse subgroups in graph products of finite groups. As a by-product, we are able to determine precisely when a right-angled Coxeter group has all its infinite-index Morse subgroups hyperbolic, answering a question of Russell, Spriano and Tran.

MSC:
20F65 Geometric group theory
20F67 Hyperbolic groups and nonpositively curved groups
20F69 Asymptotic properties of groups

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