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For each edge $uv \in E(G)$, the **edge multiplicity** of uv in G is given by

$$m_G(uv) = |N_G(u) \cap N_G(v)|.$$

For an integer k with $k \geq 2$, a **k -dense community** of a graph G , denoted by $DC_k(G)$, is a maximal connected subgraph of G induced by the vertex set

$$V_{DC_k(G)} = \{v \in V(G) : \exists u \in V(G) \text{ such that } uv \in E(G) \text{ and } m_{DC_k(G)}(uv) \geq k - 2\}.$$

In this study, we characterize which graphs are k -dense but not $(k+1)$ -dense for some values of k and study the minimum and maximum number of edges such graphs can have.

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