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LOGARITHMIC ASYMPTOTIC  
OF THE NUMBER OF CENTRAL VERTICES  
OF ALMOST ALL  $n$ -VERTEX GRAPHS OF DIAMETER  $k$ 

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ABSTRACT. The asymptotic behavior of the number of central vertices and F. Buckley's central ratio  $\mathbb{R}_c(G) = |\mathbb{C}(G)|/|V(G)|$  for almost all  $n$ -vertex graphs  $G$  of fixed diameter  $k$  is investigated.

The logarithmic asymptotics of the number of central vertices for almost all such  $n$ -vertex graphs is established: 0 or  $\log_2 n$  (1 or  $\log_2 n$ ), respectively, for arising here subclasses of graphs of the even (odd) diameter.

It is proved that for almost all  $n$ -vertex graphs of diameter  $k$ ,  $\mathbb{R}_c(G) = 1$  for  $k = 1, 2$ , and  $\mathbb{R}_c(G) = 1 - 2/n$  for graphs of diameter  $k = 3$ , while for  $k \geq 4$  the value of the central ratio  $\mathbb{R}_c(G)$  is bounded by the interval  $(\frac{\Delta}{6} + r_1(n), 1 - \frac{\Delta}{6} - r_1(n))$  except no more than one value (two values) outside the interval for even diameter  $k$  (for odd diameter  $k$ ) depending on  $k$ . Here  $\Delta \in (0, 1)$  is arbitrary predetermined constant and  $r_1(n), r_2(n)$  are positive infinitesimal functions.

**Keywords:** graph, diameter, radius, central vertices, number of central vertices, central ratio, center, spectrum of center, typical graphs, almost all graphs.

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