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DIGRAPHS WITH LARGE EXPONENT*

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Abstract. Primitive digraphs on n vertices with exponents at least $\lfloor \omega_n/2 \rfloor + 2$, where $\omega_n = (n-1)^2 + 1$, are considered. For $n \geq 3$, all such digraphs containing a Hamilton cycle are characterized; and for $n \geq 6$, all such digraphs containing a cycle of length $n-1$ are characterized. Each eigenvalue of any stochastic matrix having a digraph in one of these two classes is proved to be geometrically simple.

Key words. primitive directed graph, exponent.

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