Distributing vertices on hamiltonian cycles

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Abstract

Let $G$ be a graph of order $n$ and $3 \leq t \leq \frac{n}{4}$ be an integer. Recently, Kaneko and Yoshimoto provided a sharp $\delta(G)$ condition such that for any set $X$ of $t$ vertices, $G$ contains a hamiltonian cycle $H$ so that the distance along $H$ between any two vertices of $X$ is at least $n/2t$. In this paper, minimum degree and connectivity conditions are determined such that for any graph $G$ of sufficiently large order $n$ and for any set of $t$ vertices $X \subseteq V(G)$, there is a hamiltonian cycle $H$ so that the distance along $H$ between any two consecutive vertices of $X$ is approximately $n/t$. Furthermore, we determine the $\delta$ threshold for any $t$ chosen vertices to be on a hamiltonian cycle $H$ in a prescribed order, with approximately predetermined distances along $H$ between consecutive chosen vertices.