1112-05-221 **Miaomiao Han*** (mmhan@math.wvu.edu), Department of Mathematics, West Virginia University, Morgantown, WV 26506-6310, and **Hong-Jian Lai** (hjlai@math.wvu.edu), Department of Mathematics, West Virginia University, Morgantown, WV 26506-6310. *On dense strongly $\mathbb{Z}_{2s+1}$-connected graphs.*

Let G be a graph and $s > 0$ be an integer. If, for any function $b : V(G) \to \mathbb{Z}_{2s+1}$ with $\sum_{v \in V(G)} b(v) \equiv 0 \bmod 2s+1$, G always has an orientation D such that the net outdegree at each v is congruent to $b(v) \bmod 2s+1$, then G is strongly $\mathbb{Z}_{2s+1}$-connected. Contract all nontrivial strongly $\mathbb{Z}_{2s+1}$-connected subgraphs of G to get the $\mathbb{Z}_{2s+1}$-reduction G', In this paper, we prove that for any integers $s, t > 0$ and real numbers a, b with $0 < a < 1$, there exist an integer N and a finite family $\mathcal{Y}$ of non-strongly $\mathbb{Z}_{2s+1}$-connected graphs such that for any connected simple graph G with order $n \geq N$ and independence number $\alpha(G)$, if G satisfies one of the following conditions:

(i) $\alpha(G) \leq t$ and for any edge $uv \in E(G)$, $\max\{d_G(u), d_G(v)\} \geq an + b$, or

(ii) $\alpha(G) \leq t$ and for any $u, v \in V(G)$ with $dist_G(u, v) = 2$, $\max\{d_G(u), d_G(v)\} \geq an + b$, or

(iii) for any $uv \notin E(G)$, $\max\{d_G(u), d_G(v)\} \geq an + b$,

then G is strongly $\mathbb{Z}_{2s+1}$-connected if and only if the $\mathbb{Z}_{2s+1}$-reduction of G is not in the finite family $\mathcal{Y}$. (Received August 11, 2015)