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Pouria Salehi Nowbandegani* (pouria.salehi.nowbandegani@vanderbilt.edu), 2601
Hillsboro Pike, A11, Nashville, TN 37212. *Chvátal-Erdős Condition of Prism-Hamiltonicity*.

Let G be a graph and by $\kappa(G)$ and $\alpha(G)$ we mean the connectivity and independence number of G respectively. The *prism* over a graph G is the Cartesian product $G \square K_2$ of G with the complete graph K_2 . If $G \square K_2$ is Hamiltonian, we say that G is prism-Hamiltonian.

In this project we find sharp Chvátal-Erdős condition for the existence of a Hamiltonian cycle in $G \square K_2$ and $G \square K_k$. D. West asked the following question [?];

Given a positive integer k , what is the largest value of α such that if G has connectivity k and independence number α , then the prism over G is Hamiltonian? There are sharp examples which show that such α must be between k and $2k$.

We show the sharp result, that for a k -connected graph G with $\alpha(G) \leq 2k$, is prism-Hamiltonian. As a generalization of this result, for a graph G we proved that if $\alpha(G) \leq (k-1)\kappa(G)$ then $G \square K_k$ is Hamiltonian.

References

[1] Douglas B. West, Hamiltonian Cycles in Prisms, Douglas B. West's Home Page

<http://www.math.illinois.edu/~dwest/regs/hamprism.html>, Downloaded Dec. 2016.

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