1146-05-315   **Andrzej Dudek***, Department of Mathematics, Western Michigan University, Kalamazoo, MI 49024. *Powers of Hamiltonian cycles in randomly augmented graphs.*

We study the existence of powers of Hamiltonian cycles in graphs with large minimum degree to which some additional edges have been added in a random manner. It follows from the theorems of Dirac and of Komlós, Sarközy, and Szemerédi, who confirmed the Posá-Seymour conjecture, that for every $k \geq 1$ and sufficiently large n already the minimum degree $\delta(G) \geq \frac{k}{k+1}n$ for an n-vertex graph G alone suffices to ensure the existence of the k-th power of a Hamiltonian cycle. Here we show that under essentially the same degree assumption the addition of just $O(n)$ random edges ensures the presence of the $(2k+1)$-st power of a Hamiltonian cycle with probability approaching one as $n \to \infty$. This is joint work with Sylwia Antoniuk, Christian Reiher, Andrzej Ruciński and Mathias Schacht. (Received January 25, 2019)