1121-05-72 **Ryan R. Martin*** (rymartin@iastate.edu), Department of Mathematics, 396 Carver Hall, Iowa State University, Ames, IA 50010, and **Richard Mycroft** and **Jozef Skokan**. *An asymptotic multipartite Kühn-Osthus theorem.*

An h-vertex graph H is said to perfectly tile an n-vertex graph G if there is a subgraph of G consisting of n/h vertex-disjoint copies of H. Kühn and Osthus showed that n sufficiently large, $h \mid n$, and $\delta(G) \geq \left(1 - \frac{1}{\chi^*(H)}\right) n + C$ is sufficient for a perfect H-tiling. Here, $\chi^*(H)$ is a parameter related to Komlós' critical chromatic number and C is a constant depending only on H. This generalizes classical results by Hajnal and Szemerédi, among others.

When the underlying graph is a balanced multipartite graph, the picture changes and seems even more difficult. We prove an asymptotic multipartite version of the Kühn-Osthus result. For an r-partite graph G, the relevant parameter is denoted $\delta^*(G)$, the minimum number of neighbors a vertex in G has in any of the other $r-1$ vertex classes. We show that if H is an h-vertex, r-colorable graph, $\alpha > 0$ is fixed, n is sufficiently large, and $h \mid n$, then any balanced r-partite graph G on rn vertices with $\delta^*(G) \geq \left(1 - \frac{1}{\chi^*(H)}\right) n + \alpha n$, then G has a perfect H tiling. Moreover, this cannot be improved, apart from replacing the αn term by a constant C. (Received July 11, 2016)