1121-05-200 **A. Czygrinow** (aczygri@asu.edu), **H.A. Kierstead** (kierstead@asu.edu) and **T. Molla*** (molla@illinois.edu). *Ladders in dense graphs.* Preliminary report.

Suppose G is graph on n vertices. A 2-factor of G is a spanning 2-regular subgraph. In 1993, Aigner and Brandt proved that if G has minimum degree $\frac{2n-1}{3}$, then G contains every 2-factor on n vertices. Three years later, Kierstead and Fan proved that the same minimum degree condition implies that G contains the square of a hamiltonian path, and the square of a path on n vertices contains every 2-factor on n vertices.

When n is even, one can ask for a bipartite 2-factor of G. An implication of the El-Zahar conjecture, recently proved for sufficiently large graphs by Abbasi, Khan, Sárközy and Szemerédi, is that when n is even, every graph G on n vertices with minimum degree $n/2$ contains every bipartite 2-factor. We prove that, for sufficiently large and even n, if G has minimum degree $n/2$, then G contains a spanning subgraph with maximum degree 3 that contains every bipartite 2-factor on n vertices. This spanning subgraph usually is a ladder, a graph on n vertices with edge set consisting of the union of a perfect matching $\{x_1y_1, \ldots, x_{\frac{n}{2}}y_{\frac{n}{2}}\}$ (the rungs) and the edges of the paths $x_1 \ldots x_{\frac{n}{2}}$ and $y_1 \cdots y_{\frac{n}{2}}$ (the rails). (Received July 18, 2016)