Forbidden Subgraphs and \((k, m)\)-pancyclicity

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Abstract

A graph \(G\) on \(n\) vertices is said to be \((k, m)\)-pancyclic if each \(k\)-set \(S \subseteq V(G)\) is contained in cycles of each of the following lengths: \(m, m + 1, \cdots, n\). This property generalizes vertex pancyclicity. There are ten pairs of forbidden subgraphs which guarantee that a 2-connected graph is \((k, m)\)-pancyclic for some integer \(m \leq n\). We give the best (smallest) possible value for \(m\) in each of these ten cases. Examples are provided which show that the ten values given are best possible.