Even orientations of graphs

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A graph G is 1-extendable if every edge belongs to at least one 1-factor. Let G be a graph with a 1-factor F. Then an even F-orientation of G is an orientation in which each F-alternating cycle has exactly an even number of edges directed in the same fixed direction around the cycle.
We examine the structure of 1-extendable graphs G which have no even F-orientation where F is a fixed 1-factor of G and we give a characterization for k-regular graphs with $k \geq 3$ and graphs with connectivity at least four. Moreover, we will point out a relationship between our results on even orientations and Pfaffian graphs.

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