Peg Solitaire on Graphs

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The single-player board game (Peg) Solitaire has been around for centuries and eventually attracted researchers from mathematics and computer science. Recently, but certainly very naturally, peg solitaire was extended to graphs. The game rules are as follows: Place pegs on all vertices but one of a (connected) finite simple graph G. If u, v and w are vertices of G such that uv and vw are edges of G and there are pegs on u and v but not on w, then it is possible to jump with the peg from u onto w removing the peg from v in the process. Usually one tries to eliminate all but one peg from the graph's vertices by using such jumps, calling a graph solvable if that is possible.

This talk serves as an introduction to the game and provides an overview of major developments and open problems. Moreover, typical methods used in the proofs of known results will be presented. Several variations of the game, for example a misère version, were also considered recently, some of which will be discussed in this talk as well.