Hall's Condition for Partial Latin Squares

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Hall's Condition is a necessary condition for a partial latin square to be completable. Hilton and Johnson showed that for a partial latin square whose filled cells form a rectangle, Hall's Condition is equivalent to Ryser's Condition, which is a necessary and sufficient condition for completability. We give what could be regarded as an extension of Ryser's Theorem, by showing that for a partial latin square whose filled cells form a rectangle, where there is at most one empty cell in each column of the rectangle, Hall's Condition is a necessary and sufficient condition for completability.
It is well-known that the problem of deciding whether a partial latin square is completable is NP-complete. We show that the problem of deciding whether a partial latin square that is promised to satisfy Hall's Condition is completable is NP-hard.

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