1067-05-1178   **F. Blanchet-Sadri**, **Kevin Black** and **Andrew Zemke*** (`drew.zemke@gmail.com`), School of Mathematical Sciences, Rochester Institute of Technology, 85 Lomb Memorial Drive, Rochester, NY 14623-5603. *Minimum hole sparsity for partial word avoidability.*

A partial word is a sequence of symbols from a finite alphabet that may have some undefined positions, called holes, that match every letter of the alphabet. Previously, Blanchet-Sadri, Mercas, Simmons, and Weissenstein completed the classification of binary patterns with respect to partial word avoidability. We pose the problem of avoiding patterns in partial words that are very dense with holes. We define the concept of hole sparsity, a measure of the frequency of holes in a partial word. We also present two algorithms that can be used to show that a pattern is avoidable over an alphabet of a given size, allowing for partial words. Finally, we determine the minimum hole sparsity for all unary and some binary patterns in the context of trivial and nontrivial avoidability. (Received September 19, 2010)

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