## 1024-68-253

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A two-dimensional (2d) shift of finite type can be considered to be the set of tilings of the plane obtained by a given finite set of Wang tiles. Factor images of 2d shifts of finite type are called 2d sofic shifts. In one dimension, factor languages of sofic shifts are regular and many properties can be easily deduced from their finite state automata presentations. We consider two dimensional recognizable languages defined by 2d sofic shifts with property that every admissible block can be extended to a configuration of the entire plane. Attempts for presentations with two graphs (automata) of such languages have shown to lead to imprecise structures. We present a single finite state automaton for recognizing such 2d languages. Moreover, certain language, and hence shift space properties, such as some type of transitivity and periodicity can be deduced from the automaton. We also point out a few conditions that allow for state reduction (state merging) and minimization of the automaton. (Received January 09, 2007)