

## On the problem of tiling the plane with a polyomino

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### **Abstract**

The Beauquier-Nivat condition characterizes the boundary words of polyominoes that tile the plane by translation. First, we show how this condition translates the geometrical properties of such polyominoes into a structural property of their boundary words. Then, we show how combinatorics on words are efficient for handling such problems from discrete geometry by producing optimal algorithms for deciding if a polyomino tiles the plane by translation.