Fibonacci colored compositions and their applications

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We review common compositional representations of the Fibonacci sequence in order to construct and interpret various colored compositions. Using variations of the Fibonacci sequence as a coloring sequence, we create colored compositions and introduce the idea of a secondary tiling. In representing such compositions as tilings of a $1 \times n$ board, the secondary tiling is used to describe the coloring of each part. We develop several algorithms, utilizing the secondary tiling, to connect some colored compositions to other combinatorial objects such as words over a finite alphabet, spanning trees, and ordered consecutive partition sequences. This is joint work with Juan Gil.

Keywords: Colored compositions, Fibonacci numbers, tilings.