

C^2 -finite Sequences: A Computational Approach

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We define a class of sequences which satisfy a linear recurrence with coefficients that, in turn, satisfy a linear recurrence with constant coefficients themselves, i.e., are C -finite. These C^2 -finite sequences are a natural generalization of P -finite sequences. We show that C^2 -finite sequences form a ring and study additional computational properties. It turns out that, compared to P -finite sequences, the algorithmic aspects are much more involved and are related to difficult problems in number theory. Furthermore, we present and discuss an implementation of these methods in the computer algebra system SageMath.

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