Exposé court

4   *On algebraic structures of linear recurrent sequences*

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Several operations can be defined on the set of linear recurrent sequences, such as the binomial convolution or the multinomial convolution (also known respectively as the Hurwitz product and as the Newton product). We demonstrate, using elementary techniques, that when equipped with the termwise sum and the aforementioned products, this set forms an $R-$algebra, for any commutative ring R with identity. Additionally, we explicitly provide the characteristic polynomial of both the Hurwitz and the Newton product of any two linear recurrent sequences. Finally, we explore whether these $R-$algebras are isomorphic, while also considering the $R-$algebras obtained using the Hadamard product and the convolution product. We conclude with a brief overview about linear divisibility sequences and a conjecture due to J. Silverman about a particular divisibility sequence arising from algebraic integers.