

Composite polynomials in second order linear recurrence sequences

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This is joint work with Clemens Fuchs and Dijana Kreso. Let $(G_n)_{n=0}^\infty \in \mathbb{C}[x]$ be a minimal non-degenerate simple binary linear recurrence sequence of polynomials, defined by $A_0, A_1, G_0, G_1 \in \mathbb{C}[x]$ and the relation

$$G_{n+2}(x) = A_1(x)G_{n+1}(x) + A_0(x)G_n(x), \quad n \in \mathbb{N}.$$

We show that, under certain assumptions on the sequence, if $G_n = g \circ h$ holds for some $n \in \mathbb{N}$ and h is indecomposable, then either h is of special shape or $\deg g$ is bounded by a constant independent on n . Moreover, we give sufficient conditions on A_0, A_1, G_0, G_1 such that the assumptions in question are satisfied. In the talk an outline of the proof shall be presented.