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Monoapparitic Linear Divisibility Sequences of Order Four

A sequence of rational integers A_n is said to be a divisibility sequence if $A_m \mid A_n$ whenever $m \mid n$. If the divisibility sequence A_n also satisfies a linear recurrence relation, it is said to be a linear divisibility sequence. Divisibility sequences of order greater than 2 can in general have more than one rank of apparition with respect to a given prime p . We say that a linear divisibility sequence is monoapparitic with respect to p if it has only one rank of apparition modulo p , i.e. if m is the least positive integer such that $p \mid A_m$, then if $p \mid A_n$, we must have $m \mid n$. In this talk, we produce some conditions that are necessary in order for certain linear divisibility sequences of degree four to be monoapparitic for every prime. We next derive, under a reasonable heuristic assumption, the likelihood that under one of these conditions the sequence will be monoapparitic with respect to p .