1047-05-39　　　　　　**Wesley Pegden*** (`pegden@math.rutgers.edu`), 110 Frelinghuysen Rd, Piscataway, NJ 08540.
Thue-type games and highly nonrepetitive sequences.

A theorem of J. Beck, proved with the Lovász Local Lemma, asserts that there is an infinite binary sequence in which any long identical blocks are exponentially far apart. We prove that an analagous result can be achieved even with only limited control over the sequence—that is, we prove that if two players take turns selecting binary digits to form an unending sequence, Player 1 has a strategy to ensure exponential distance between any long identical blocks. The existence of Player 1's winning strategy is proved probabilistically, via an extension of the Local Lemma which can dramatically reduce the number of edges needed in a dependency graph when there is an ordering underlying the significant dependencies of events. The same method allows us to prove other theorems with the same theme; for example, we show that for sufficiently large base c (*e.g.,* $c \geq 37$), Player 1 has a strategy which avoids repetition of any blocks of lengths ≥ 2 in the c-ary sequence game, giving a natural game-theoretic analog to Thue's original theorem on nonrepetitive sequences. These results represent the first successful application of a Local Lemma to games. (Received December 10, 2008)