1117-05-57 **Nathan Fox*** (`fox@math.rutgers.edu`). *Well-Behaved Solutions to Hofstadter-Like Recurrences.*

For over fifty years, the seemingly chaotic behavior of the Hofstadter Q-sequence has baffled mathematicians. While the sequence superficially seems to exhibit some patterns, it is still unknown whether the sequence even exists for all n. Other related sequences, such as those of Conway, Conolly, and Tanny, have similar definitions, but instead can be easily predicted. In addition, these sorts of recurrences are highly sensitive to their initial conditions. A given recurrence may generate some sequences with highly regular patterns, other sequences that "die" after only a few terms, and yet others that exist for a long time but behave chaotically. For example, Golomb described a quasilinear sequence generated by the Hofstadter Q-recurrence, and Ruskey found another well-behaved solution that contains the Fibonacci numbers as an evenly-spaced subsequence. In this talk, we will explore how we can automatically find (and prove we found) initial conditions to Hofstadter-like recurrences that generate well-behaved solutions akin to those of Golomb and Ruskey. (Received December 29, 2015)