1098-37-128 **Reem Yassawi*** (`ryassawi@trenu.ca`), Department of Mathematics, Trent University, 1600 West Bank Drive, Peterborough, Ontario K9J7B8, Canada, and **Eric Rowland**. *Using constant length substitutions to compute congruences of algebraic sequences.*

A sequence of integers $(a_k)_{k\in\mathbb{N}}$ is *algebraic* if its generating function $y = \sum_k a_k x^k$ is the root of a polynomial $P(x, y)$ with integer coefficients. Many combinatorial sequences, such as the Motzkin numbers or the Fibonacci numbers, are algebraic. A result of Christol, and also Denef and Lipshitz, tells us that given for any prime p and natural number m, the sequence $(a_k \mod p^m)_{k\in\mathbb{N}}$ is the letter to letter projection of a constant length p substitution. We apply this result to show that, for any such algebraic sequence (a_k), and any p and m, there is a constructive procedure to compute this sequence modulo p^m . We compute several examples, reproving several results in the combinatorics literature, and we also compute new congruences, such as for the Apéry numbers, which are not algebraic, but which are "diagonals" of higher dimensional algebraic arrays. We also discuss how these algebraic sequences naturally lead to a definition of a constant length substitution and corresponding subshift, on infinitely many letters. This is joint work with Eric Rowland. (Received January 20, 2014)