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Reem Yassawi* (ryassawi@trentu.ca), 1600 West Bank Drive, Peterborough, Ontario K9J7B8, Canada, and **Eric Rowland**. *Some constant length substitutions on closed subsets of the p -adic integers.*

Let $(a_k)_{k \in \mathbb{N}}$ be a sequence of natural numbers such that for some p and any m , $(a_k \bmod p^m)_{k \in \mathbb{N}}$ is p -automatic. Examples include *algebraic* sequences: those whose generating function $y = \sum_k a_k x^k$ is the root of a polynomial $P(x, y)$ with integer coefficients; these sequences' projection modulo p^m is p -automatic for any p . Other examples include *cocycle maps* between fixed points $(u_n)_{n \geq 0}$ and $(v_n)_{n \geq 0}$ of two constant length p substitutions on a finite alphabet with the same incidence matrix. We discuss how these sequences naturally lead to a definition of a constant length substitution and corresponding dynamical system, on a closed subset of \mathbb{Z}_p , the p -adic integers. This research is joint work with Eric Rowland. (Received August 19, 2014)