On periodic Jacobi-Perron algorithm over formal power series field. Preliminary report.

In this paper we are able to prove that over any formal power series field extension of degree $n + 1$, $\mathbb{F}_q[X][\rho]$, there is a vector $(\omega_1, \ldots, \omega_n)$ in $(\mathbb{F}_q[X][\rho])^n$, which is periodic by the Dubois version of the Jacobi-Perron algorithm. We prove also that there is no algebraic formal series $\omega$ such that the vector $(\omega, \omega^2)$ is 2-purely periodic by the homogenous version of Jacobi-Perron algorithm and we give a characterization of vector $(\omega, \omega^2)$ which is 1 and 3-purely periodic by it. We conjecture that this result holds for $2n$ and $2n + 1$. (Received August 03, 2010)