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Rufei Ren* (rufeir@uci.edu), 69306 Verano Pl, Irvine, CA 92617, and **Daqing Wan, Liang Xiao** and **Myungjun Yu**. *Slopes for higher rank Artin–Schreier–Witt Towers*.

We fix a monic polynomial $\bar{f}(x) \in \mathbb{F}_q[x]$ over a finite field of characteristic p , and consider the \mathbb{Z}_{p^ℓ} -Artin–Schreier–Witt tower defined by $\bar{f}(x)$; this is a tower of curves $\cdots \rightarrow C_m \rightarrow C_{m-1} \rightarrow \cdots \rightarrow C_0 = \mathbb{A}^1$, whose Galois group is canonically isomorphic to \mathbb{Z}_{p^ℓ} , the degree ℓ unramified extension of \mathbb{Z}_p , which is abstractly isomorphic to $(\mathbb{Z}_p)^\ell$ as a topological group. We study the Newton slopes of zeta functions of this tower of curves. This reduces to the study of the Newton slopes of L-functions associated to characters of the Galois group of this tower. We prove that, when the conductor of the character is large enough, the Newton slopes of the L-function asymptotically form a finite union of arithmetic progressions. As a corollary, we prove the spectral halo property of the spectral variety associated to the \mathbb{Z}_{p^ℓ} -Artin–Schreier–Witt tower. This extends the main result in [?] from rank one case $\ell = 1$ to the higher rank case $\ell \geq 1$. (Received July 19, 2016)