Let $k$ be a field of characteristic $p \geq 3$, and let $G$ be an infinitesimal unipotent $k$-supergroup scheme. In this talk I will report on work with Jonathan Kujawa, in which we investigate the cohomological spectrum $|G|$ of $G$, as well as the cohomological support schemes $|G|_M \subset |G|$ associated to each finite-dimensional rational $G$-supermodule $M$. Generalizing the classical results of Suslin, Friedlander, and Bendel, we show that there is a homeomorphism between $|G|$ and the scheme $V_r(G)$ of Hopf superalgebra homomorphisms $\nu : P_r \to kG$, where $P_r$ is a naturally arising Hopf superalgebra, and this homeomorphism restricts to a homeomorphism between $|G|_M$ and a naturally defined Zariski closed conical subscheme $V_r(G)_M \subset V_r(G)$. To make these identifications, we rely in an essential way on a nilpotence detection theorem for arbitrary finite unipotent supergroup schemes by Benson, Iyengar, Krause, and Pevtsova. (Received June 25, 2018)