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Non-Archimedean Hénon maps, attractors, and horseshoes.

We study the dynamics of the Hénon map defined over complete, locally compact non-Archimedean fields of odd residue characteristic. We establish basic properties of its one-sided and two-sided filled Julia sets, and we determine, for each Hénon map, whether these sets are empty or nonempty, whether they are bounded or unbounded, and whether they are equal to the unit ball or not. On a certain region of the parameter space we show that the filled Julia set is an attractor. We prove that, for infinitely many distinct Hénon maps over \mathbb{Q}_3 , this attractor is infinite and supports an SRB-type measure describing the distribution of all nearby forward orbits. We include some numerical calculations which suggest the existence of such infinite attractors over \mathbb{Q}_5 and \mathbb{Q}_7 as well. On a different region of the parameter space, we show that the Hénon map is topologically conjugate on its filled Julia set to the two-sided shift map on the space of bisequences in two symbols. (Received January 25, 2018)