We study the existence of special points in extremally disconnected compact topological spaces that witness their nonhomogeneity. Via Stone duality, we are looking for ultrafilters on complete Boolean algebras with special combinatorial properties. We introduce the notion of a coherent ultrafilter (coherent P-point, coherently selective). We show that generic existence of such ultrafilters on every complete ccc Boolean algebra of weight not exceeding the continuum is consistent with set theory, and that they witness the nonhomogeneity of the corresponding Stone spaces.

We study the properties of the order-sequential property on σ-complete Boolean algebras and its relation to measure-theoretic properties. We ask whether the order-sequential topology can be compact in a nontrivial case, and partially answer the question in a special case of the Suslin algebra associated with a Suslin tree.