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On the complexity of some σ-ideals of σ-P-porous sets

Comment.Math.Univ.Carolinae 44,3 (2003) 531-554.

Abstract: Let **P** be a porosity-like relation on a separable locally compact metric space E. We show that the σ-ideal of compact σ-**P**-porous subsets of E (under some general conditions on **P** and E) forms a $\mathbf{\Pi^1_1}$-complete set in the hyperspace of all compact subsets of E, in particular it is coanalytic and non-Borel. Our general results are applicable to most interesting types of porosity. It is shown in the cases of the σ-ideals of σ-porous sets, σ-$\langle g\rangle$-porous sets, σ-strongly porous sets, σ-symmetrically porous sets and σ-strongly symmetrically porous sets. We prove a similar result also for σ-very porous sets assuming that each singleton of E is very porous set.

Keywords: σ-porous sets, σ-ideal, coanalytic sets, Hausdorff metric
AMS Subject Classification: 54H05, 28A05