

**Caicedo, Andrés Eduardo; Clemens, John Daniel; Conley, Clinton Taylor; Miller, Benjamin David**

**Definability of small puncture sets.** (English) Zbl 1254.03085

Fundam. Math. 215, No. 1, 39-51 (2011).

The main result of the paper is that if  $\kappa$  is an infinite cardinal,  $\mathcal{X}$  a class of Hausdorff spaces,  $\Gamma$  a pointclass  $\kappa$ -chromatic on  $\mathcal{X}$  (i.e., every  $\Gamma$ -measurable  $\omega$ -dimensional digraph on  $X \in \mathcal{X}$  satisfies a weak analog of the Kechris-Solecki-Todorćević dichotomy characterising the existence of Borel colorings),  $X \in \mathcal{X}$ ,  $E$  a  $\Gamma'$  (dual of  $\Gamma$ ) measurable, weakly  $\omega$ -universally Baire equivalence relation on  $X$ , and  $\mathcal{A} \subseteq [X/E]^{\leq \omega}$   $\Gamma$ -measurable, then one of the following holds:

- 1) There is a set of cardinality  $< \kappa$  intersecting every member of the family  $\mathcal{A}$ .
- 2) There is a pairwise disjoint subset of  $\mathcal{A}$  of cardinality  $2^\omega$ .

The authors give several application of this result concerning different pointclasses  $\Gamma$ . They also discuss the definability of the puncture set (the set intersecting every member of  $\mathcal{A}$ ) obtained in the proof.

Their result generalizes the results obtained in papers of Clemens-Conley-Miller, Marks-Miller, and Miller.

Reviewer: [Szymon Zeberski \(Wrocław\)](#)

**MSC:**

03E15 Descriptive set theory (logic)  
28A05 Classes of sets

**Keywords:**

[definability](#); [dichotomy theorems](#); [puncture sets](#)

**Full Text:** [DOI](#)