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Borel sets with large squares. (English) Zbl 0941.03052
Fundam. Math. 159, No. 1, 1-50 (1999).

It is consistent that for every $\alpha < \omega_1$ there is a Borel set on the plane containing a square of cardinality $\aleph_{\alpha+1}$ but not a perfect square (square of a perfect set). If, however, $\kappa > 2^{\aleph_0}$ Cohen reals are added then, in the resulting model, if an analytic set contains a κ -square, then it contains a perfect square. This is connected to some problems on Hanf numbers below 2^{\aleph_0} . Under MA the properties turn out to be equivalent. In this technically delicate paper, the case of rectangle containment is also investigated.

Reviewer: [Peter Komjath \(Budapest\)](#)

MSC:

[03E15](#) Descriptive set theory
[03E35](#) Consistency and independence results
[03E05](#) Other combinatorial set theory
[03E50](#) Continuum hypothesis and Martin's axiom
[03C55](#) Set-theoretic model theory

Cited in **3** Reviews
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Keywords:

[Borel set](#); [perfect square](#); [Cohen reals](#); [analytic set](#); [Hanf numbers](#); [rectangle containment](#); [Martin's Axiom](#); [Borel rectangles](#)

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