

MICROSCOPIC SETS IN METRIC SPACES AND POLISH GROUPS

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A set in a metric space is *microscopic* if it admits, for each $\varepsilon > 0$, a cover $\{E_n : n \in \mathbb{N}\}$ such that $\text{diam } E_n \leq \varepsilon^{n+1}$. The notion is close to strong measure zero and other natural ideals. Quite a number of papers have been published since the notion was introduced by J. Appell 20 years ago, most of them by Łódź mathematicians (Filiczak, Głab, Horbaczewska, Chrząszcz, Karasińska, Paskiewicz, Poreda, Wagner-Bojakowska – did I miss someone?) and also by Kwela, Czudek, Mrozek, Woloszyn, and D’Aniello, Maiuriello and Văth.

I will review some facts, old and new, and calculate some cardinal invariants of microscopic sets, making use of Kwela’s beautiful theorem and recently calculated cardinal invariants of strong measure zero. It is a common work with Michael Hrušák.

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