

“Pathological” Cantor Manifolds – II

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The n -dimensional compact topological space is called to be a Cantor Manifold (CM), if it is not a sum of two proper closed subsets with no more than $(n - 2)$ -dimensional intersection. It is by definition a Strongly Cantor Manifold (SCM), if it is not a countable sum of proper closed subsets with no more than $(n - 2)$ -dimensional pairwise intersection. In other words if $X = \bigcup_{i=1}^{\infty} X_i$ and $X_i \subsetneq X$ then $\dim \bigcup_{i \neq j} (X_i \cap X_j) \leq n - 2$. Denote further by M the set $M = \bigcup_{i \neq j} (X_i \cap X_j)$ then $\dim M \leq n - 2$. In this note we consider “how worst” can be the set M . For example it is constructed here an example of (SCM) X with $\dim X = n$ or even $\dim X = \infty$ and $\dim M = 0$. Or on the contrary $\dim X = 5$, X is (SCM) and $\dim_G M = \infty$, where \dim_G means the cohomological dimension. Also if (X, ϱ) is a metric space we may choose “the blocks” X_i with big dimensional diameters. Note that in more of the known so far examples $\dim M = \dim X - 2$ and the sequence of $(n - 1)$ -dimensional diameters of X_i ’s tends to zero.