K-Triviality of Closed Sets and Continuous Functions

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Abstract

We investigate the notion of K-triviality for closed sets and continuous functions in $2^{\mathbb{N}}$. For every K-trivial degreee $\mathbf{d}$, there exists a closed set of degree $\mathbf{d}$ and a continuous function of degree $\mathbf{d}$. Every K-trivial closed set contains a K-trivial real. There exists a K-trivial Π^0_1 class with no computable elements. A closed set is K-trivial if and only if it is the set of zeroes of some K-trivial continuous function. We give a density result for the Medvedev degrees of K-trivial Π^0_1 sets. If $W \leq_T A'$, then W can compute a path through every A'-decidable random closed set if and only if $W \equiv_T A'$.