

# ON A CLASS OF POLISH-LIKE SPACES

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The Cantor and Baire spaces have natural generalizations to uncountable cardinals  $\kappa$ , and in the last two decades many results have been proven about them under the hypothesis  $\kappa^{<\kappa} = \kappa$ . There is more uncertainty about what should be the right generalization of Polish spaces. What we expect is a class of spaces of weight  $\kappa$  which includes the two previous mentioned and can support most of generalized descriptive set theory. Recently S. Coskey and P. Schlicht in [1] showed that one property that characterizes the completeness of metric spaces in the classical case, being strong Choquet, can be extended to higher cardinals and gives a class of spaces with promising properties.

The assumption  $\kappa^{<\kappa} = \kappa$  is equivalent to  $2^{<\kappa} = \kappa$  for  $\kappa$  regular, but the second one is suitable also for singular cardinals. In a forthcoming paper, V. Dimonte, L. Motto Ros and X. Shi use this last assumption to study descriptive set theory on singular cardinals of countable cofinality, where there is a natural definition of  $\lambda$ -Polish as a completely metrizable space of weight  $\lambda$ .

In this talk, I will present an ongoing work in collaboration with L. Motto Ros where we try to put together this two approaches and study a class of spaces which is suitable for all cardinals satisfying  $2^{<\lambda} = \lambda$ , but coincide with S. Coskey and P. Schlicht's definition if  $\lambda$  is regular, and with V. Dimonte, L. Motto Ros and X. Shi's one if  $\lambda$  has countable cofinality. I will define this class and show how many properties that holds in the classical theory may be proved with different or similar tools in this case as well.

## REFERENCES

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