

Baire classes of affine vector-valued functions

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We investigate Baire classes of strongly affine mappings with values in Fréchet spaces. We show, in particular, that the validity of the vector-valued Mokobodzki's result on affine functions of the first Baire class is related to the approximation property of the range space. We further extend several results known for scalar functions on Choquet simplices or on dual balls of L_1 -preduals to the vector-valued case. This concerns, in particular, affine classes of strongly affine Baire mappings, the abstract Dirichlet problem and the weak Dirichlet problem for Baire mappings. Some of these results have weaker conclusions than their scalar versions. We also establish an affine version of the Jayne–Rogers selection theorem.

