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Letter to those interested in σ-porous sets.

Sirs,

I would like to point out some results about non-linear σ-porous sets which seem to have been overlooked. For example, in the paper "Local compactness and porosity in metric spaces" by S. Agronsky and A. Bruckner (Real Anal. Exchange 11(1985-86), 365-379) one can read: "While linear porosity has been studied extensively, porosity in spaces more general than the line seems to have been ignored." I believe that this is far from being true. Already in Zajíček's fundamental note "Sets of σ-porosity and sets of σ-porosity (q)" (Čas. Pěst. Mat. 101 (1976), 350-359) there are deep results about porosity in general metric spaces. If one wants to see some applications of non-linear porosity, he can look through:

L. Zajíček, "Differentiability of the distance function and points of multi-valuedness of the metric projection in Banach space", Czech. Math. J. 33(108)(1983), 292-307.

-, "Generalization of an Ekeland-Lebourg theorem and differentiability of distance functions", Proc. 11th Winter School, Suppl. Rend. Circ. Mat. Palermo, Ser. II, No.3(1984), 401-410.

D.Preiss, L.Zajíček, "Fréchet differentiation of convex functions in a Banach space with a separable dual", Proc. Amer. Math. Soc. 91(1984), 202-204.

-, "Stronger estimates of smallness of sets of Fréchet nondifferentiability of convex functions", Proc. 12th Winter School, Suppl. Rend. Circ. Mat. Palermo. Ser. II, No. 5(1984), 219-223.

L.Zajíček, "On the Frechet differentiability of distance functions", ibid., 161-165.

To give an idea how these applications look like, let me just mention the main result of the third named paper: The set of points of Fréchet nondifferentiability of any continuous convex function on a Banach space with a separable dual is σ-porous.

Yours sincerely,

David Preiss