Continuity properties of weakly monotone Orlicz-Sobolev functions

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The notion of weakly monotone functions extends the classical definition of monotone function, that can be traced back to Lebesgue. It was introduced, in the framework of Sobolev spaces, by J.Manfredi, in connection with the analysis of the regularity of mappings of finite distorsion appearing in nonlinear elasticity theory. Advances in the study of weakly monotone functions are due to T.Iwaniecz, J. Kauhanen, P. Koskela, J. Maly, J. Onninen, X. Zhong who thoroughly investigated continuity properties of monotone functions in the more general setting of Orlicz-Sobolev spaces, in view of continuity, openness and discreteness for mappings of finite distortion under minimal integrability assumptions on the distortion. I will present some complements and further developments in the available Orlicz-Sobolev theory of weakly monotone functions. In particular, a variant will be proposed in a customary condition ensuring the continuity of functions from this class, which avoids certain technical additional assumptions. The continuity outside sets of zero Orlicz capacity, and outside sets of (generalized) zero Hausdorff measure will also be discussed when everywhere continuity fails.