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The poster is based on the joint work with Peter Hästö and Petteri Harjulehto

In my paper with Harjulehto and Hästö [1], we started on a regularity theory for generalized Orlicz spaces, i.e. spaces of functions u that are $\varphi(x, u)$ integrable, and so generalize the generalizations of Lebesgue spaces, such as Orlicz ($\varphi(u)$), variable exponent ($u^{p(x)}$), and the double phase case ($u^p + a(x)u^q$). Our necessary assumptions on φ for employing the De Giorgi method for local (quasi)minimizers of $\int_{\Omega} \varphi(x, \nabla u) \, dx$, $\Omega \subset \mathbb{R}^n$: (a) did not include polynomial growth or a coercivity condition, and (b) translated to the known optimal assumptions in the special cases of e.g. variable exponent and double phase spaces.

References

 P. Harjulehto, P. Hästö and O. Toivanen, Hölder regularity of quasiminimizers under generalized growth conditions, Calc. Var. Partial Differential Equations, 56 (2), 2017, 1–26.