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A generalized Sobolev embedding theorem and applications

In a recent work we proved that under explicit, simple and optimal conditions on the Musielak-Orlicz function $\varphi$, the Sobolev-Musielak-Orlicz space $W^{1,\varphi}_0$ compactly embeds in $L^{\varphi}$. This compactness result and its applications to variational-type eigenvalue problems will be discussed.