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EXISTENCE OF POSITIVE SOLUTION FOR A CLASS OF QUASILINEAR SCHRÖDINGER EQUATIONS WITH POTENTIAL VANISHING AT INFINITY ON NONREFLEXIVE ORLICZ–SOBOLEV SPACES

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Abstract. In this paper we investigate the existence of positive solution for a class of quasilinear problem on an Orlicz–Sobolev space that can be nonreflexive

$$-\Delta_\Phi u + V(x)\phi(|u|)u = K(x)f(u) \quad \text{in } \mathbb{R}^N,$$

where $N \geq 2$, V, K are nonnegative continuous functions and f is a continuous function with a quasicritical growth. Here we extend the Hardy-type inequalities presented in [3] to nonreflexive Orlicz spaces. Through inequalities together with a variational method for non-differentiable functionals we will obtain a ground state solution. We analyze also the problem with $V = 0$.

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