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## Existence of Weak Solutions for Double-Phase Elliptic Operators via Young Measures

### Communication Info

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- (1) Fractional double phase problem
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- (3) Galerkin method
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### Abstract

In this paper, we investigate a nonlinear elliptic Dirichlet problem driven by a double-phase operator of  $(\alpha, \beta)$ -Laplacian type. The model reflects nonstandard growth behavior generated by the interaction of two distinct diffusion mechanisms modulated by a weight function.

The study is conducted within the framework of Musielak–Orlicz–Sobolev spaces, which provide an appropriate functional setting for handling double-phase effects. Under suitable continuity and growth conditions on the nonlinear term, we prove the existence of weak solutions.

The analysis combines Galerkin approximation techniques with the theory of Young measures in order to overcome difficulties related to nonlinear weak convergence and possible oscillation phenomena.

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