

# Existence results for nonhomogeneous fractional Schrödinger-Poisson systems involving critical exponents

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In this paper, we are committed to finding the nontrivial nonnegative weak solutions of the following Schrödinger-Poisson systems:

$$\begin{cases} (-\Delta)^s u + V(x)u - K(x)\phi(x)|u|^{q-2}u = f(x, u) + \lambda g(x) & \text{in } \mathbb{R}^3, \\ (-\Delta)^s \phi(x) = K(x)|u|^q & \text{in } \mathbb{R}^3, \end{cases} \quad (1)$$

where  $s \in (0, 1)$ ,  $1 < q \leq 2_s^* - 1 := (3 + 2s)/(3 - 2s)$ ,  $\lambda > 0$  is a parameter,  $V : \mathbb{R}^3 \rightarrow \mathbb{R}$  is a scalar potential. Meanwhile, we assume that the potential function can change sign, and the nonlinearity involves critical and subcritical growth. By using a fixed point theorem, we can find a nontrivial weak solution in a reflexive Banach semilattice. Furthermore, in the last part of the article, we apply the fixed point theorem to handle a class of Schrödinger-Poisson systems with inconsistent fractional exponents and obtain an existence result.

## References

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