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Title: Nonlocal Schrödinger-Poisson systems with critical oscillatory growth

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Abstract: In this talk, we are concerned with the existence of nontrivial solutions for the following nonlinear fractional Schrödinger–Poisson system

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

in absence of compactness (unbounded domain and/or critical nonlinearities), where $0 < s < 1$, $0 < \alpha < 1$, and $2\alpha + 4s \geq 3$. The nonlinearities $f(x,t)$ and $g(x,t)$ have oscillatory subcritical and critical growth respectively, the potential $a(x)$ may change sign and the potential $K(x) \geq 0$ belongs to a suitable class of Lebesgue spaces. This class of problems involves double lack of compactness because of the unboundedness of the domain $\mathbb{R}^3$ and nonlinearities with critical log-oscillatory growth around the pure power $t \mapsto |t|^{2_s^*-2}t$ in the sense of Sobolev embedding. To overcome these difficulties we adopt an approach based in a refined version of the concentration-compactness method introduced by M. Struwe for Palais-Smale sequences for some semilinear elliptic functionals.