

"Continuous-spin particles" appear in the group-theoretical classification of elementary particles as unitary irreducible representations of the Poincaré group. These massless fields have been rarely considered in the literature because they have an infinite number of degrees of freedom at each space-time point. However, some recent progresses by Schuster and Toro from Perimeter Institute prompted a surge of interest for these exotic particles. More precisely, they proposed in 2014 a covariant local action principle whose Euler-Lagrange equations describe a single bosonic continuous-spin particle (CSP). Recently, we proposed a similar action principle for fermionic CSPs but, in this talk, we will focus on bosonic ones.