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High Energy Physics - Theory

Extended supersymmetry in massless conformal higher spin theory

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We propose superfield equations in tensorial N-extended superspaces to describe the N=2,4,8 supersymmetric generalizations of free conformal higher spin theories. These can be obtained by quantizing a superparticle model in N-extended tensorial superspace. The N-extended higher spin supermultiplets just contain scalar and 'spinor' fields in tensorial space so that, in contrast with the standard (super)space approach, no nontrivial generalizations of the Maxwell or Einstein equations to tensorial space appear when N>2. For N=4,8, the higher spin-tensorial components of the extended tensorial superfields are expressed through additional scalar and spinor fields in tensorial space which obey the same free higher spin equations, but that are axion-like in the sense that they possess Peccei-Quinn-like symmetries.

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