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Effective field theory with deformed w(1+infinity) algebra on the celestial sphere.

The material is based on the previous paper 2111.11356 and also a paper to appear collaborating with Anastasia Volovich and Akshay Yellespur. We compute the deformation of the w1+∞ algebra of soft graviton, gluon and scalar currents in the Celestial CFT due to non-minimal couplings. Such deformed algebra shares some similarities with the W(1+infinity) algebra but has essential differences. We find that the Jacobi identity of the algebra, as well as the associativity of the OPE between these soft current operators are satisfied only when the spectrum and couplings of the theory obey certain constraints. We also study the effect of these constraints on the amplitudes in the 4d bulk theory.

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