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[3008] $SL(2,R)$ charges on the light cone

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This contribution describes how the so-called Barbero–Immirzi parameter, which is akin to the theta parameter in QCD, deforms the $SL(2,R)$ symmetries of the gravitational boundary data on a null surface. Our starting point is the definition of the gravitational action and its boundary terms. We introduce the covariant phase space and explain how the Holst term alters the symmetries on a null surface. We show that this alteration only affects the algebra of the edge modes, whereas the algebra of the radiative modes is unchanged. Finally, we compute the Dirac bracket between physical observables on an auxiliary phase space, where the $SL(2,R)$ symmetries of the boundary fields is manifest.

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