Ann. Sc. Norm. Super. Pisa Cl. Sci. (5)
Vol. XXIV (2023), 367-447

The Picard group of the universal moduli stack of principal bundles on pointed smooth curves II

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Abstract. In this paper, which is a sequel of [14], we investigate, for any reductive group G over an algebraically closed field k, the Picard group of the universal moduli stack $\mathrm{Bun}_{G,g,n}$ of G-bundles over n-pointed smooth projective curves of genus g. In particular, we give new functorial presentations of the Picard group of $\mathrm{Bun}_{G,g,n}$, we study the restriction homomorphism onto the Picard group of the moduli stack of principal G-bundles over a fixed smooth curve, we determine the Picard group of the rigidification of $\mathrm{Bun}_{G,g,n}$ by the center of G as well as the image of the obstruction homomorphism of the associated gerbe. As a consequence, we compute the divisor class group of the moduli space of semistable G-bundles over n-pointed smooth projective curves of genus g.

Mathematics Subject Classification (2020): 14H60 (primary); 14D20, 14C22, 20G07, 14H10 (secondary).