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A decomposition of the Brauer-Picard group of the representation category of a finite group

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A decomposition of the Brauer-Picard group of the representation category of a finite group

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Abstract. We present an approach of calculating the group of braided autoequivalences of the category of representations of the Drinfeld double of a finite dimensional Hopf algebra H and thus the Brauer-Picard group of H-mod. We consider two natural subgroups and a subset as candidates for generators. In this article H is the group algebra of a finite group G. As our main result we prove that any element of the Brauer-Picard group, fulfilling an additional cohomological condition, decomposes into an ordered product of our candidates.
For elementary abelian groups G our decomposition reduces to the Bruhat decomposition of the Brauer-Picard group, which is in this case a Lie group over a finite field. Our results are motivated by and have applications to symmetries and defects in $3d$-TQFT and group extensions of fusion categories.

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