# <span id="page-0-0"></span>Derived Picard groups and integration of Hochschild cohomology (arXiv:2405.14448)

Sebastian Opper

Charles University, Prague

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Sebastian Opper Derived Picard groups and integration of Hochschild cohomology

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Let A be a (dg) algebra.

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# Hochschild cohomology

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\{ \text{Lie groups} \} \longleftrightarrow \{ \text{Lie algebras} \}
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Sebastian Opper Derived Picard groups and integration of Hochschild cohomology

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$$
  
(+)  $\implies$  exp : (U, 'BCH)  $\longrightarrow$  G is a **group homomorphism.**  $\implies$   $\implies$   $\otimes$   $\otimes$   
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#### Definition (pre-Lie exponential)

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Suppose char  $k = 0$  and A is a dg algebra (c-unital  $A_{\infty}$ -category).

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Proof relies on work by many people.

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## Injectivity of exponential

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## Injectivity of exponential

One can prove a general sufficient criterion for the injectivity of  $exp<sub>A</sub>$ .

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- $\bullet$  A is an E<sub>2</sub>-algebra, e.g. any commutative dg algebra, cochain algebra  $C^{\bullet}(X)$  over topological space X, Hochschild complexes.

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# The identity component of  $\mathcal{D}\text{Pic}(A)$  and outer automorphisms

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<span id="page-116-0"></span>Sebastian Opper Derived Picard groups and integration of Hochschild cohomology

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Sebastian Opper Derived Picard groups and integration of Hochschild cohomology

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### **Teasers**

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- Necessary condition for uniqueness of lifts of triangulated functors to enhancements and the related uniqueness problem for Fourier-Mukai kernels.
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# Thank you for your attention!

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