



The Hong Kong University of Science and Technology

Department of Mathematics

MPhil THESIS EXAMINATION

Construction of Higher Sheaf Theory

By

Mr. Yang HU

ABSTRACT

In this thesis, we discuss a construction of higher sheaf theory. Usual sheaf theory can be encoded as a lax symmetric monoidal $(\infty, 1)$ -functor from the category of spans in the category of schemes or stacks to the ∞ -category of presentable categories:

$$\mathrm{Shv}(-) : \mathrm{Span}_1(\mathcal{C}) \rightarrow \mathrm{Pr}^{\mathrm{L}}.$$

Here $\mathcal{C}$ denotes the category of schemes or stacks. Starting from a given sheaf theory $\mathrm{Shv}(-)$, we construct an $(\infty, 2)$ lax symmetric monoidal functor

$$2\mathrm{Shv}(-) : \mathrm{Span}_2(\mathcal{C}) \rightarrow 2\mathrm{Pr},$$

which may be regarded as a higher sheaf theory. And as an example, we also discuss higher sheaf on the classifying stack BG of a smooth algebraic group scheme G .

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Time : 3:00 pm

Venue : Room 4472 (Lifts 25-26)

Thesis Examination Committee

Chairman : Prof. Ivan Chi Ho IP, MATH /HKUST
Thesis Supervisor : Prof. Quoc HO, MATH/HKUST (via online)
Member : Prof. Qingyuan JIANG, MATH/HKUST

(Open to all faculty and students)

The student's thesis is now being displayed on the reception counter in the General Administration Office (Room 3461).