

1054-18-19

Ahmet Emin Tatar* (atatar@math.fsu.edu), 356 Pennell Circle Apt. 8, Tallahassee, FL
32310. *Abelian Sheaf Complexes and Picard 2-Stacks.*

In SGA4 Exposé XVIII, Deligne studies the relation between Picard stacks and length 2 complexes of abelian sheaves, as well as the relation between the morphisms of such objects. He proves that the functor

$$D^{[-1,0]}(\mathbf{S}) \longrightarrow \mathrm{Pic}^b(\mathbf{S})$$

is an equivalence. $D^{[-1,0]}(\mathbf{S})$ is the subcategory of the derived category of category of complexes of abelian sheaves A^\bullet over a site \mathbf{S} with $H^{-i}(A^\bullet) \neq 0$ only for $i = 0, 1$ and $\mathrm{Pic}^b(\mathbf{S})$ is the category of Picard stacks over \mathbf{S} with 1-morphisms isomorphism classes of additive functors.

The purpose of this talk is to generalize the above result to Picard 2-stacks. We give a definition of Picard 2-stack and define their 3-category $2\mathrm{Pic}(\mathbf{S})$. We also introduce a tricategory $T^{[-2,0]}(\mathbf{S})$ of length 3 complexes of abelian sheaves. Then we construct a trihomomorphism

$$T^{[-2,0]}(\mathbf{S}) \longrightarrow 2\mathrm{Pic}(\mathbf{S}),$$

which we prove to be a triequivalence. From this triequivalence, we deduce a generalization of Deligne's analogous result about Picard stacks. (Received July 11, 2009)