Source file: `src/sites.tex`

# SITES AND SHEAVES

## 1. Introduction

The notion of a site was introduced by Grothendieck to be able to sudy sheaves in the étale topology of schemes. The basic reference for this notion is perhaps [MA71].

1.1. **Topologies.** Let $C$ be a category, see Conventions, Section 3. In the following the notation $\{U_i \to U\}_{i\in I}$ means that $U \in \mathrm{Ob}(C)$, that $I$ is a set and that for each $i \in I$ we are given a morphism $U_i \to U$ of $C$ with target $U$. The collection of all $\{U_i \to U\}_{i\in I}$ forms a category. Namely, a morphism $\{U_i \to U\}_{i\in I} \to \{V_j \to V\}_{j\in J}$ is given by a morphism $U \to V$, a map of sets $\alpha : I \to J$ and for each $i \in I$ a morphism $U_i \to V_{\alpha(i)}$ such that the diagram

$$\begin{array}{ccc} U_i & \longrightarrow & V_{\alpha(I)} \\ \downarrow & & \downarrow \\ U & \longrightarrow & V \end{array}$$

is commutative.

Later we will actually use Conventions, Lemma 3.1.1, but here we refer to it just to test cross-referencing.

## References

[MA71] J.L. Verdier M. Artin, A. Grothendieck. *Theorie de Topos et Cohomologie Etale des Schemas I, II, III*, volume 269, 270, 305 of *Lecture Notes in Mathematics*. Springer, 1971.