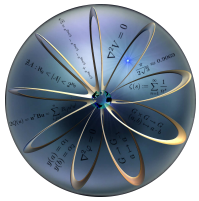

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presheaf

Canonical name	Presheaf
Date of creation	2013-03-22 12:03:22
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For a topological space X a presheaf F with values in a category $\mathcal{C}$ associates to each open set $U \subset X$, an object $F(U)$ of $\mathcal{C}$ and to each inclusion $U \subset V$ a morphism of $\mathcal{C}$, $\rho_{UV} : F(V) \to F(U)$, the restriction morphism. It is required that $\rho_{UU} = 1_{F(U)}$ and $\rho_{UW} = \rho_{UV} \circ \rho_{VW}$ for any $U \subset V \subset W$.

A presheaf with values in the category of sets (or abelian groups) is called a presheaf of sets (or abelian groups). If no target category is specified, either the category of sets or abelian groups is most likely understood.

A more categorical way to state it is as follows. For X form the category $\mathbf{Top}(X)$ whose objects are open sets of X and whose morphisms are the inclusions. Then a presheaf is merely a contravariant functor $\mathbf{Top}(X) \to \mathcal{C}$.