Topos Theory and Categorical Logic
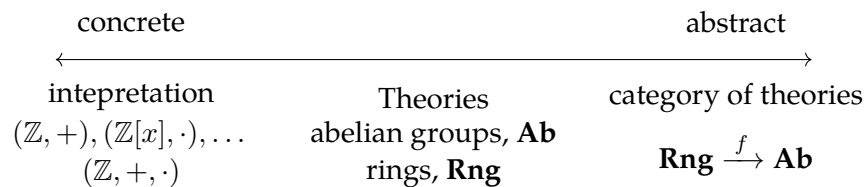
Course Page

April 11, 2020

Contents

1 An Invitation to Topos Theory

concrete		abstract

$$\longleftarrow \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad \longrightarrow$$

intepretation	Theories	category of theories
$(\mathbb{Z}, +), (\mathbb{Z}[x], \cdot), \dots$	abelian groups, **Ab**	
$(\mathbb{Z}, +, \cdot)$	rings, **Rng**	$\mathbf{Rng} \xrightarrow{f} \mathbf{Ab}$

mathematical logic: theorems and proofs are mathematical objects

Definition 1.1. A **category** $\mathcal{C}$ has objects $X, Y, Z \dots$ and **morphisms** $f : X \to Y, g : Y \to Z$ and **compositions** rule $(g, f) \mapsto g \circ f : X \to Z$