



# Random Variable Laws

## 1 Why

We name the image measures of real-valued random variables.

## 2 Definition

The *law* of a real-valued random variable, using the topological sigma algebra, is the image measure of the probability measure under the random variable. Recall that

### 2.1 Notation

Let  $(X, \mathcal{A})$  and  $(Y, \mathcal{B})$  be two measurable spaces. Let  $f : X \rightarrow Y$  be a random variable. Let  $\mu : \mathcal{A} \rightarrow [0, \infty]$  be a probability measure. We denote the law of  $f$  by  $\mu_f$ .