# Motivic Zeta Function

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**Definiton 1.** In the following the term $k$-*variety* always means a separated, integral scheme of finite type over a field $k$. Denote by $\mathcal{V}_k$ the category of $k$-varieties.

**Definiton 2.** Let $k$ be a Field. Consider the group of formal linear combinations of isomorphism-classes in $\mathcal{V}_k$. Setting $[X] \times [Y] := [X \times Y]$ makes this into a ring. The *Grothendieck ring of varieties* $K_0[\mathcal{V}_k]$ is then obtained by modding out relations of the form

$$[X] - [Y] = [X \setminus Y]$$

Where $Y$ is closed in $X$.

A *motivic measure* is a ringhomomorphism $\mu : K_0[\mathcal{V}_k] \to A$ into a ring $A$. The identity function $\mathtt{id} : K_0[\mathcal{V}_k] \to K_0[\mathcal{V}_k]$ is called the *universal motivic measure*.