Quotient Sets:

From Equivalence to Equality

In this talk we will discuss the equality relation ($=$) and the more general equivalence relation ($\sim$). Given a set A and an equivalence relation $\sim$, we build a new set $A/\sim$ where the equivalent objects become equal. This quotient set construction is quite ubiquitous in the mathematical sciences. Indeed, quotient sets are used in constructing the set $\mathbb{Q}$ of rational numbers from the set $\mathbb{Z}$ of integers and in constructing the set $\mathbb{C}$ of complex numbers from the set $\mathbb{R}$ of real numbers. We will also consider the construction of the set $\mathbb{Z}/n\mathbb{Z}$ of integers modulo n as well as some other interesting mathematical objects.