THE TRIVIAL NOTIONS SEMINAR

Rosie Shen

will speak on

Hodge theory for elliptic curves

ABSTRACT

Let E_λ be an elliptic curve given by the equation

$$y^2 = x(x-1)(x-\lambda),\ \lambda \neq 0, 1.$$

Our curve can also be described as a complex torus $\mathbb{C}/\Lambda$. How can we recover a suitable lattice from our cubic equation? We will see that a detailed study of this question leads naturally to the notion of period maps and period domains in Hodge theory.

We will also look at the behaviour of our period map as $\lambda \to 0$, and use it to show that the cohomology groups of E_λ "converges" to the cohomology of the nodal cubic E_0 in a suitable sense. Time permitting, we will indicate how these fit into the general picture of (limit) mixed Hodge structures of Deligne and Schmid.

Tuesday, April 19, 2022
at 1:30 pm
Science Center, Room 232