BOSTON UNIVERSITY GEOMETRY SEMINAR

$K3$ surfaces and a Moonshine for Mathieu 24

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Tea 2:45-3 in MCS 153

Abstract:
Recently a relation between $K3$ surfaces and the sporadic group Mathieu 24 has been discovered in the context of string theory. First, the conformal field theory on $K3$ contains modular objects given by the representations of the group $M24$. This fact points to a novel theory of moonshine relating $M24$ and weak Jacobi forms. Second, this implies an $M24$ symmetry of a generalised Kac-Moody algebra, whose denominator is an automorphic form. This automorphic form turns out to encode both the above mentioned weak Jacobi forms and a set of eta-products which are the key objects in an earlier version of moonshine relating M24 and cusp forms. In this talk I will summarize my work on the relationship between black holes, K3 surfaces, M24, modular objects and generalised Kac-Moody algebras.