Department of Mathematics Colloquium

May 28, Thursday, 4:15 p.m. Room 380-W.

New Avatars of Moonshine

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Abstract

Monstrous moonshine strikingly relates the largest of the sporadic simple finite groups, the Fischer-Griess monster, to certain preferred modular functions: the j-function and other Hauptmoduln. The relation is (partially) understood as the consequence of the existence of a particular, rather peculiar, solution of string theory.

More recently, starting with the 2010 work of Eguchi-Ooguri-Tachikawa, several analogous moonshines have been uncovered. These new moonshines exhibit intriguing new features. For instance, while many questions remain, it is already clear that several fundamental new objects, including mock modular forms and K3 surfaces, will play an important role in the story that is unfolding.

The goal of the talk will be to give a self-contained presentation of these developments, both (briefly) reviewing Monstrous moonshine and introducing its modern counterparts.