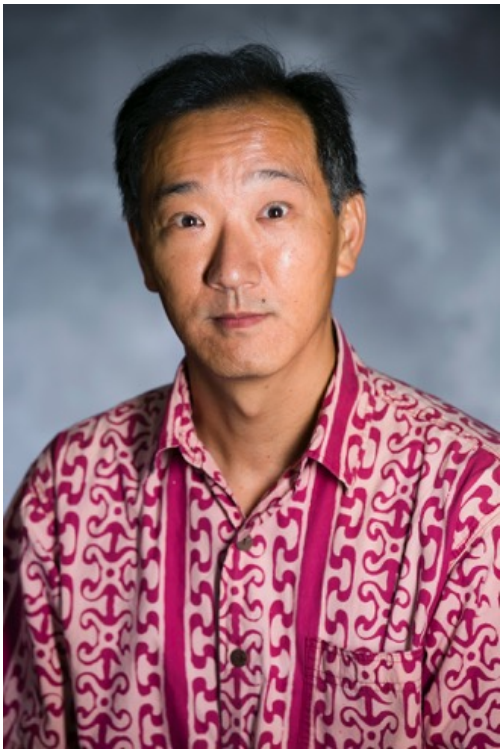
Department of Mathematics

Fall 2017 Colloquium Series

Can't You Just Feel the Moonshine?



Ken Ono
Emory University

Tuesday, September 12, 2017

Founders Hall 25, 4:30 pm

Borcherds won the Fields medal in 1998 for his proof of the Monstrous Moonshine Conjecture. Loosely speaking, the conjecture asserts that the representation theory of the Monster, the largest sporadic finite simple group, is dictated by the Fourier expansions of a distinguished set of modular functions. This conjecture arose from astonishing coincidences noticed by finite group theorists and arithmetic geometers in the 1970s.

Recently, mathematical physicists have revisited moonshine, and they discovered evidence of undiscovered moonshine which some believe will have applications to string theory and 3d quantum gravity. The speaker and his collaborators have been developing the mathematical facets of this theory, and have proved the conjectures which have been formulated. These results include a proof of the Umbral Moonshine Conjecture, and Moonshine for the first sporadic finite simple group which does not occur as a subgroup or subquotient of the Monster.

The most recent Moonshine (announced here) yields unexpected applications to the arithmetic elliptic curves thanks to theorems related to the Birch and Swinnerton-Dyer Conjecture and the Main Conjectures of Iwasawa theory for modular forms. This is joint work with John Duncan, Michael Griffin and Michael Mertens.

To view this poster online, go to http://www.humboldt.edu/math/news-and-events/math-colloquium

We cordially invite you to the Pre-Colloquium Tea on the third floor of the BSS building at 3:30 pm on Tuesday