Hecke operators in generalized Moonshine and equivariant elliptic cohomology

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Abstract

After a short introduction to generalized Moonshine, I will explain how the theory of equivariant elliptic cohomology suggests a geometric interpretation of Norton's conditions. Then I will discuss three different definitions of Hecke operators on generalized Moonshine functions:

1) a geometric one, using isogenies,

2) a combinatorial one, given by cohomology operations on the loop space of an orbifold, and

3) the twisted Hecke operators of classical Moonshine.

I will prove that all three definitions give rise to exactly the same formula.