

Mock Moonshine

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ABSTRACT

Even before the Moonshine conjectures relating representations of the Monster group and classical modular functions, was proved several researchers speculated that the Moonshine phenomena should extend to other groups, especially symmetries of lattices. The resulting program called Umbral Moonshine is now substantially complete. Recently, it has been shown that the partition functions counting degeneracy of BPS states in the Beckenstein-Hawking radiation from black holes in quantum gravity in a special $N = 4$ supersymmetric theory can be expressed in terms of newly discovered modular objects. They also include all of Ramanujans mock theta functions in his well known last letter to Hardy.