Moonshine beyond the Monster

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Run Run Shaw Building, Room 210

Abstract

Over the last 35 years, Moonshine has been an intriguing subject in mathematics, providing a still somewhat mysterious connection among Number Theory, especially the theory of modular forms, Representation Theory of finite groups, and Mathematical Physics. In the first part of my talk, I explain the general phenomenon of Moonshine at the historically first instance of so-called Monstrous Moonshine, as well as the more recent case of Umbral Moonshine. In the second part of the talk, I intend to talk in a bit more detail on joint work with J. F. R. Duncan and K. Ono, which proves the first ever instance of "Pariah Moonshine", specifically Moonshine for the sporadic O'Nan group, as well as novel arithmetic implications of this Moonshine.