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The search for exotic vertex operator algebras

A frustrating aspect of our current understanding of vertex operator algebras (VOAs) is a lack of examples. More precisely, there are very few if any examples of VOAs which are independent of classical math like Lie algebras or lattices or finite groups. Is this because that is all the VOAs there are? Or are there whole worlds of new families of VOAs, and we are just too dumb (too classical) to find them? If we look at some shadows cast by VOAs (e.g. their tensor categories), we find several hints that such exotic VOAs should exist, and in fact be numerous. In my talk I'll sketch this story, and apply it to the most interesting exotic candidate: the so-called Haagerup CFT, which has been pursued by both mathematicians and physicists for well over a decade.