Title: An old-fashioned view of BPS-algebras

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Abstract: The notion of the algebra of BPS states goes back to work of Harvey and Moore in the late 90's. Explicit computations in perturbative heterotic string theory point to an algebraic structure isomorphic to a Generalized Kac-Moody (GKM) algebra in that context; at the same time, rather mysteriously, denominators of GKMs furnish signed counts of BPS states in certain supersymmetric string vacua. The most famous example of this is the reciprocal of the Igusa cusp form of weight 10, which governs some BPS state counts related to string theory on the product of a nonsingular K3 surface and an elliptic curve E. Other denominator formulas, more generally, produce interesting examples of Siegel automorphic forms, and have enumerative geometric interpretations. I will review recent progress understanding the role of GKMs in some special string vacua related to Monstrous and Conway moonshine modules (based on work with Persson & Volpato, and Harrison & Volpato), as well as a new class of putative GKM denominators obtained from a large class of quotients of K3xE (based on work with Volpato & Zimet).

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