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A theorem of Gollnitz and its place in the theory of partitions

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Abstract: A Rogers-Ramanujan type identity is a series=product identity which relates certain partitions into parts satisfying difference to partitions into parts satisfying congruence conditions. Rogers-Ramanujan type identities arise in a variety of settings ranging from Lie algebras to statistical mechanics. A supreme example of such a partition identity is the deep 1967 theorem of Gollnitz. We shall discuss a new approach to Gollnitz's theorem in which this partition result and its generalizations will emerge out of a remarkable q -hypergeometric identity in three free parameters. This leads to crucial connections with several fundamental results on partitions and q -series, a new combinatorial understanding of Jacobi's triple product identity for theta functions, and to some partition congruences modulo powers of 2. The talk will be accessible to non-experts.

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