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**Georgia Benkart\*** ([benkart@math.wisc.edu](mailto:benkart@math.wisc.edu)), Department of Mathematics, University of Wisconsin-Madison, Madison, WI 53706. *Walking on Representation Graphs and Generalized Hyperbolic Functions.*

A finite group  $G$  and a representation of  $G$  on a finite-dimensional vector space  $V$  determine a certain graph (the so-called representation graph). For example, when  $G$  is a product of  $n$  copies of the integers modulo 2,  $V$  could be taken to be the  $n$ -cube. This talk will focus on counting the number of walks from one node to another on such graphs. For any  $G$  and  $V$ , we give an expression for the number of walks in terms of group characters and show for any abelian group that the exponential generating function for the number of walks can be expressed using generalized hyperbolic functions. The number of walks determines the dimension of the irreducible modules for the centralizer algebra of the action of  $G$  on tensor powers of  $V$ , so the expressions give those dimensions as well. This is joint work with Dongho Moon. (Received September 17, 2015)