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Jeff Mermin (mermin@math.cornell.edu), Malott Hall, Mathematics Department, Cornell University, Ithaca, NY 14853, **Irena Peeva** (ivp1@cornell.edu), Malott Hall, Mathematics Department, Cornell University, Ithaca, NY 14853, and **Michael Stillman*** (mike@math.cornell.edu), Malott Hall, Mathematics Department, Cornell University, Ithaca, NY 14853. *The Lex-plus-powers conjecture for ideals containing the squares of the variables.*

Let $S = k[x_1, \ldots, x_n]$ be a polynomial ring over a field k. We study the graded Betti numbers of homogeneous ideals I which contain the squares $P = (x_1^2, \ldots, x_n^2)$. Our main result is the lex-plus-powers conjecture for such ideals (due to Herzog and Hibi, and later in a more general form to Evans): We prove that if k has characteristic zero, and $L \subset S$ is a squarefree lexicographic ideal such that I and the lex-plus-squares ideal $L + P$ have the same Hilbert function, then the graded Betti numbers of $L + P$ are greater than or equal to those of I. (Received September 28, 2005)