1051-13-217   **Melissa Lindsey*** (`lindsey9@math.purdue.edu`), Purdue University, Department of Mathematics, 150 N. University Street, West Lafayette, IN 47907-2067. *A Class of Hilbert Series and the Strong Lefschetz Property.*

Let k be a field of characteristic zero, and let $R = k[x_1, \ldots, x_n]$ be a standard graded polynomial ring in n variables over k. We determine the class of Hilbert series $\mathcal{H}$ so that if M is a finitely generated zero-dimensional R-graded module with the strong Lefschetz property, then $M \otimes_k k[y]/(y^m)$ has the strong Lefschetz property for y an indeterminate and all positive integers m if and only if the Hilbert series of M is in $\mathcal{H}$. For $l \in R_1$ a strong Lefschetz element for M, we determine the structure of $M \otimes_k k[y]/(y^m)$ as a graded $k[l, y]$-module for it to also have the strong Lefschetz property for y an indeterminate and all positive integers m. (Received August 25, 2009)