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Juan Migliore* (migliore.1@nd.edu), Dept. of Mathematics, University of Notre Dame, Notre Dame, IN 46556, and **Rosa M. Miro-Roig** and **Uwe Nagel**. *The Weak Lefschetz Property for powers of linear forms.*

Let I be an artinian ideal generated by powers of general linear forms in a polynomial ring in r variables over a field k , which we will assume to have characteristic zero. Let L be a general linear form. The Weak Lefschetz Property (WLP) means that multiplication by L , from any component of R/I to the next, induces a homomorphism of finite dimensional vector spaces that has maximal rank. Schenck and Seceleanu showed that when $r = 3$, any such R/I has the WLP. We focus on the case of $r + 1$ forms, in several different settings, to determine when the WLP holds. It turns out to be far different from the $r = 3$ case. We give an almost complete answer for the case $r = 4$, and an analysis of the uniform and near-uniform case in more variables. Our approach is via the connection (thanks to Macaulay duality) to fat point ideals, and the analysis of these by several authors, together with a reduction to a smaller projective space. (Received July 28, 2010)