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**Patricia J Klein\*** ([triciajk@umich.edu](mailto:triciajk@umich.edu)). *A Generalization of a Theorem of Lech's.*

Let  $(R, m)$  be a complete local ring of dimension  $d$ . Lech's inequality states that for every  $m$ -primary ideal  $I$ ,  $\frac{e_I(R)}{\ell(R/I)} \leq d! \cdot e_m(R)$ , where  $e_I(R)$  denotes the multiplicity of  $I$  on  $R$ . We will discuss conditions on  $R$  and on  $R$ -modules  $M$  that allow us to bound  $\frac{e_I(M)}{\ell(M/IM)}$  above and below independent of the  $m$ -primary ideal  $I$ . (Received July 17, 2017)