1135-13-2642   **Patricia Klein*** (`triciajk@umich.edu`). *Recovering and exploring Lech's inequality.*

Lech's inequality states that for every d-dimensional local ring (R, m) and every m-primary ideal I of R,

$$\frac{e_I(R)}{\ell(R/I)} \leq d! \cdot e_m(R).$$

We will give a new proof of Lech's inequality that utilizes characteristic $p > 0$ techniques and yet yields the result in all characteristics. We will also discuss special cases when R can be replaced by a d-dimensional R module M in Lech's inequality, either retaining the upper bound $d! \cdot e_m(R)$ or replacing it by another explicit upper bound. (Received September 26, 2017)