1067-13-266 **Emily E. Witt*** (emwitt@umich.edu), Department of Mathematics, 530 Church St., Ann Arbor, MI 48109. *An example of computing local cohomology.*

If I is an ideal of a commutative ring R, the *local cohomology modules of R with support in I*, $H^i_I(R)$, are a family of R-modules indexed by nonnegative integers i; they capture many important invariants of R and I. However, often they are very large (i.e. non-finitely generated), which makes it interesting, yet challenging, to find and understand their structure. Moreover, while there are many theorems about local cohomology modules with support in the unique homogeneous ideal $\mathfrak{m}$ of a graded ring R, much less is known about the modules $H^i_I(R)$ in the case that $I \neq \mathfrak{m}$.

Let r and s be positive integers with $r \leq s$, let k be a field of characteristic zero, and let R be the polynomial ring over k in the $r \cdot s$ indeterminates x_{ij} coming from the $r \times s$ matrix $X = [x_{ij}]$. Here we study the structures of the local cohomology modules $H^i_I(R)$ in the case that I is the ideal generated by the $r \times r$ minors (the maximal minors) of X. (Received September 22, 2010)