1051-13-208   **Luchezar L. Avramov** (`avramov@math.unl.edu`), Department of Mathematics, 203 Avery Hall, PO Box 880130, Lincoln, NE 68588–0130, and **W. Frank Moore*** (`frankmoore@math.cornell.edu`), Department of Mathematics, 587 Malott Hall, Ithaca, NY 14853-4201. *Cohomology of Connected Sums of Local Rings.*

Given homomorphisms of rings $\varepsilon_S \colon S \to k \leftarrow T : \varepsilon_T$, and ideals in S and T that carry compatible structures of k-bimodules, we note that one can form a *connected sum* ring $S \# T$ by mimicking the standard construction of connected sum of manifolds in algebraic topology. We study homological properties of the ring obtained by choosing ε_S and ε_T to be the canonical homomorphisms of commutative noetherian local rings onto a common residue field k, and isomorphic k-vector subspaces J in their socles. When the homomorphisms $S \to S/J$ and $T \to T/J$ are Golod, we express the graded Hopf algebra $\mathrm{Ext}^*_{S \# T}(k, k)$ as a coproduct of $\mathrm{Ext}^*_S(k, k)$ and $\mathrm{Ext}^*_T(k, k)$ over the tensor algebra of the vector space $\mathrm{Hom}_k(J, k)$, concentrated in degree 2. (Received August 25, 2009)