998-16-118 **Baoping Jia*** (bjia@maryville.edu), Maryville University of Saint Louis, 13550 Conway Road, Saint Louis, MO 63141. *Multiplicative Structure of Arbitrary Galois Extensions.* Preliminary report.

Let K/k be any Galois extension with Galois group G = Gal(K/k). Let K* be the set of non-zero elements of K. Let Q be the field of all rational numbers and Let Q[G] be the group ring with coefficients in Q. Then K* becomes a right Q[G]-module in the obvious way (see my paper "Splitting of rank-one valuations, Comm. Algebra 19, page 777-794,"). In my paper "Splitting of rank-one valuations," I proved that Q tensor K* is a free Q[G]-module under the condition that G is finite. By using this theorem, in another paper "A note on Hilbert's Theorem 90, Proc. of AMS, V118, No.3, page 739-744," we extended "up to powers" Hilbert's Theorem 90 from cyclic to arbitrary finite Galois extensions. In this research we prove a stronger result that, for arbitrary Galois extension with Galois group G, Q tensor K* is isomorphic to a direct sum of copies of QG, where QG is a special Q[G]-module generalized by this set of elements cH — H is a normal subgroup of G of finite index. It follows that Q tensor K* is a semisimple Q[G]-module. It is also obvious that Q[G] = QG when G is a finite group. Therefore, the new result has generalized my theorem that that Q tensor K* is a free Q[G]-module for finite Galois extension with Galois group G. (Received February 19, 2004)