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A Spectral Sequence Reduction for Low Dimensional Group Homology.

A motivational problem for group homology is a conjecture of Quillen, a version of which can be reformulated to state that the second homology of the general linear group over $R = \mathbb{Z}[1/p, \zeta_p]$, for p an odd prime, is isomorphic to the second homology of the group of units of R, where the homology calculations are over the field of order p. Moreover, this group has a finite presentation. Calculation of the homology of this group is difficult. We show by explicit calculation that the problem may be simplified by an application of the Hochschild-Serre Spectral Sequence of an appropriate group extension. More precisely, the problem of calculating the second degree homology, with the coefficients above, reduces to a calculation of a certain transgression map in the spectral sequence. (Received September 20, 2016)