

1089-57-366

Jozef H. Przytycki* (przytyck@gwu.edu), Department of Mathematics, George Washington University, Washington, DC 20052, and **Krzysztof Putyra**. *Degenerate part of a rack homology satisfies Künneth formula, I: weak simplicial modules.*

Most of the classical homology theories based on associative structures (e.g. group homology or Hochschild homology) are build on some simplicial set or module. In such cases the degenerate subcomplex is acyclic, so we can quotient by it to get normalized chain complex with the same homology as the original chain complex. If we replace associativity by distributivity then the degenerate complex does not have to be acyclic (as noted 15 years ago by Carter, Kamada, and Saito). We observe that in place of a simplicial module we deal now with a weak simplicial module. In the special case of spindles and quandles (distributive structures motivated by and important in Knot Theory) connection between degenerate and normalized homology was analyzed from the beginning without general results (except by Litherland and Nelson that rack homology splits into degenerate and normalized parts). We prove here that degenerate homology of a quandle (or spindle) can be deduced from the normalized part by a formula of a Künneth type. The theorem has as a starting point the observation that a weak simplicial module leads to a bicomplex, which can be analyzed using a spectral sequence. (Received February 19, 2013)