

Steenrod

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math.scranton.edu/monks/software/Steenrod/steen.html

Steenrod is a Maple package for doing calculations in the mod 2 Steenrod algebra.

Program overview

The current version of the STEENROD package can:

- Compute the coproduct map in A and A^* (the dual).
- Compute the product map in A , A^* , and tensor products of A , A^*
- Compute χ in both A and A^*
- Compute the action of A on the polynomial ring $Z_2[x_1, x_2, \dots, x_s]$
- Compute the action of the Kristensen stripping operations on A
- Convert a sum of monomials in $Sq(i)$ to the admissible basis using the Adem relations
- Convert between the Milnor and admissible monomial bases
- Compute the excess, degree, and May weight of elements of A
- Find all of the elements of A in a given grading in either the Milnor or admissible monomial basis
- Compute the nilpotence height of an element of A
- Determine if an element of A is in $A(n)$ or not

In addition it contains a collection of:

- Number Theoretic Functions (like α , ν_2 , etc)
- Linear Algebra mod 2 (a complete set of matrix routines to work mod 2)
- Dickson Algebra Utilities (for computing in the Dickson algebra)