

Calculations of Hochschild cohomology using Python

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Let k be a field (say the real numbers). “time” is the runtime of the program, empty means less than a second. All dimensions are as k -vector spaces.

Algebra A	$\dim(A)$	Manifold
Trivial	1	Contractible
i	$\dim HH^i(A)$	time (s)
0	1	
1	0	
2	0	
3	0	
4	0	
5	0	
6	0	
7	0	
8	0	
9	0	

Algebra A	$\dim(A)$	Manifold
$k[x]/x^2$	2	S^n
i	$\dim HH^i(A)$	time (s)
0	2	
1	1	
2	1	
3	1	
4	1	
5	1	
6	1	3
7	1	14
8	1	60
9	1	266

Algebra A	$\dim(A)$	Manifold
$k[x]/x^3$	3	
i	$\dim HH^i(A)$	time (s)
0	3	
1	2	
2	2	
3	2	1
4	2	12
5	2	130
6	2	1429

Algebra A	$\dim(A)$	Manifold
Trivial 3-form on $\beta = 3$	8	some connected sum of copies of $S^1 \times S^2$
i	$\dim HH^i(A)$	time (s)
0	8	
1	22	2
2	85	179
3	364	14387

Algebra A	$\dim(A)$	Manifold
Trivial 3-form on $\beta = 4$	10	some connected sum of copies of $S^1 \times S^2$
i	$\dim HH^i(A)$	time (s)
0	10	
1	37	8
2	196	1026

Algebra A	$\dim(A)$	Manifold
$\Lambda^3(k)$	8	$S^1 \times S^1 \times S^1$
i	$\dim HH^i(A)$	time (s)
0	5	
1	12	2
2	24	182
3	40	14364