A AS Regular of dim n

Have n generators $A = k\langle \underbrace{x_1, \dots, x_n}_{V} \rangle$

(2) / quadratic rels $= R \subseteq V \otimes V$

$HH^\bullet(A^!)$

$A^! = k\langle x^1, x^2, \dots, x^n \rangle / R^\perp \subseteq V^* \otimes V^*$ ← ⊥

Example $n = 1$

$\frac{k\langle x \rangle}{(x^2)} = A$ $\quad A^! = \frac{k(x^*)}{x^2} = \boxed{\frac{k[x]}{(x^2)}}$

Example $n = 2$

$\frac{k\langle x, y \rangle}{(q)}$ | $k[x, y]$

$k_q\langle x,y\rangle = k\langle x,y\rangle$ | $A_j = k\langle x,y\rangle$

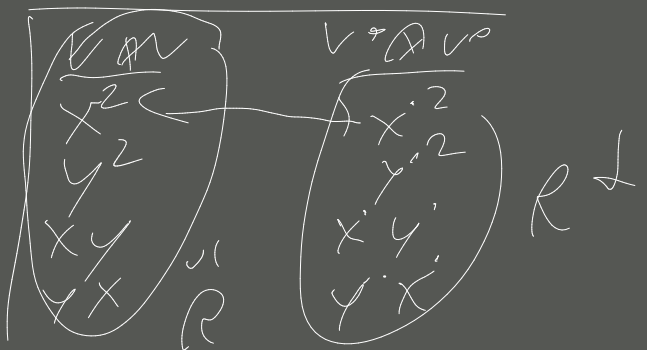
$q \in k^\times$

$yx - qxy$

$yx - xy + y^2$

A': $k\langle x', y'\rangle$

$(qy'x' + qx'y', x'^2, y'^2)$



$$\frac{k\langle x_1, \ldots, x_n \rangle}{x_i x_j = x_j x_i} = A$$

$$\frac{}{} = R$$

$$\frac{k\langle x_1 \ldots \overset{x_4}{x_3} \rangle}{(rels)}$$

$$A^! := \Lambda^* V^*$$

$$= k\langle x^1, \ldots, x^n \rangle$$

$$\frac{}{R^! \left((x^i)^2, \; x^i x^j + x^j x^i \right)}$$

$$\Big\}$$

$k\langle x, y, z\rangle$

$$\frac{k\langle x,y,z\rangle}{\left(\begin{array}{l} a\,xy + b\,yx + c\,z^2, \\ a\,yz + b\,zy + c\,x^2, \\ a\,zx + b\,xz + c\,y^2 \end{array}\right) = (R)} = A$$

$a, b, c \in k$

$$A^! = \frac{k\langle x^*, y^*, z^*\rangle}{(R^\perp)}$$

$R \subseteq V \otimes V$

$R^\perp \subseteq V^* \otimes V^*$

A graded $\quad A^!$: graded

$HH^i(A)$ graded $\quad HH^i(A^!)$ graded

$\boxed{HH^0(A)_0} \xrightarrow{\sim} HH^{2-i}(A^!)_{2-i}$

Need graded components of $HH^i(A^!)$.

$\frac{k\langle x \rangle}{(x^2-1)}$ $\frac{k\langle x,y \rangle}{(yx-qxy, x^2, y^2)}$ $q \in k^\times$ 4dim

$\frac{k\langle x,y \rangle}{(yx+xy+y^2+\cdots}$