134%

$\cdot \to \cdot \leftarrow \cdot \leftarrow \cdot$ $\qquad$ $\cdot \circlearrowright$ $\qquad$ $\cdot \rightrightarrows \cdot$

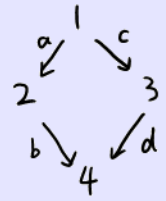
Quiver of type A_3 $\qquad$ 1-loop quiver $L(1)$ $\qquad$ 2-Kronecker quiver $K(2)$

Q: $1 \rightrightarrows 2$ $\qquad$ M_λ: $K \overset{\lambda}{\underset{1}{\rightrightarrows}} K$ $\quad (\lambda \in K)$

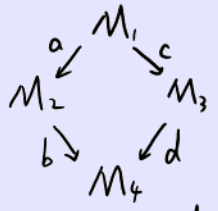
$\mathrm{Hom}_{kQ}(P(1), M_\cdot) = ?$ $\qquad$ $\mathrm{Hom}_{kQ}(S(1), P(1)) = ?$ $\qquad$ $\mathrm{Hom}_{kQ}(M_\lambda, M_\mu) = ?$

Let V be a k-linear space of finite dimension,
$\Phi(V)$: $V \xrightarrow{Id_V} V \xrightarrow{Id_V} V$ be a rep of quiver Q: $\cdot \to \cdot \to \cdot$
What is the subrepresentaion of $\Phi(V)$?
$\mathcal{F}lag_3(V) = \{ 0 \subseteq V_1 \subseteq V_2 \subseteq V_3 \subseteq V \mid V_1, V_2, V_3 \text{ subspace} \}$

Q:

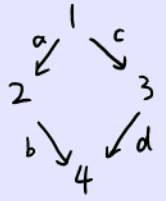


$M \in \mathrm{mod}(kQ/I)$:



where $boa = doc$

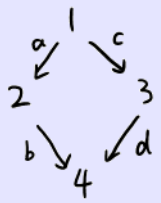
Q:



$I = (ab - cd)$ $\qquad$ $P(1) = I(4)$

$$\mathrm{rep}(Q) \longrightarrow \mathrm{mod}(kQ)$$
$$(V_i, V_a) \longmapsto \oplus V_i$$
$$a \in Q_1 \subset kQ: \oplus V_i \xrightarrow{\pi_{s(a)}} V_{s(a)} \xrightarrow{V_a} V_{t(a)} \xrightarrow{\iota_{t(a)}} \oplus V_i$$

$$(e_i W, a \cdot -: e_{s(a)} W \to e_{t(a)} W) \longmapsto W$$

Q: 

$I = (ab - cd)$ Compute $\mathrm{Ext}^i_{kQ/I}(S(1), S(4))$