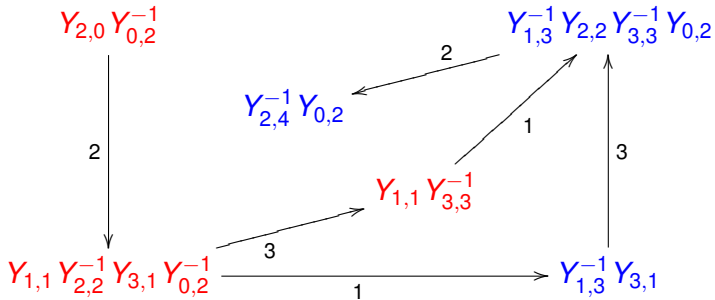
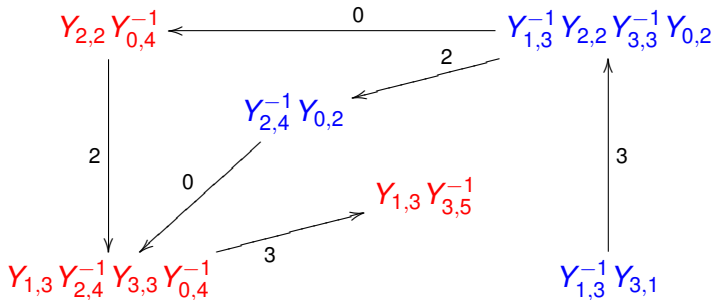


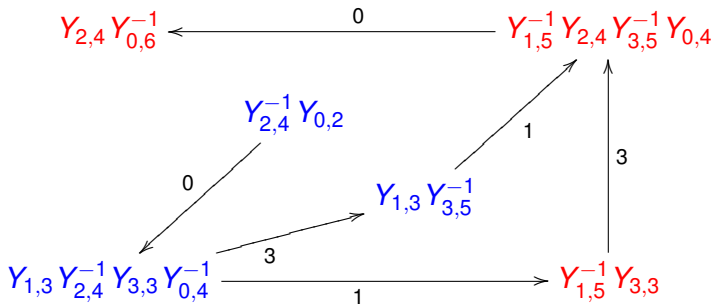
# Cristaux monomiaux et opérateurs de promotion

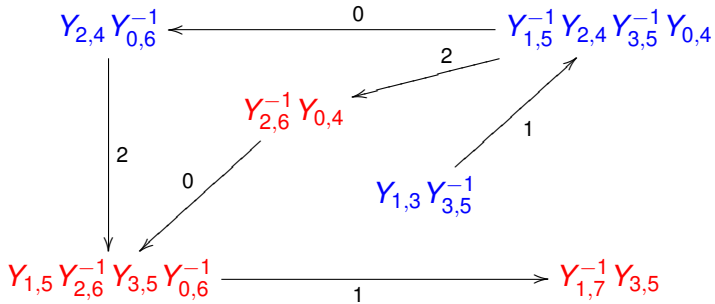
$\mathcal{U}_q(\hat{\mathfrak{sl}}_4)$ -cristal  $\mathcal{M}(Y_{2,0} Y_{0,2}^{-1})$

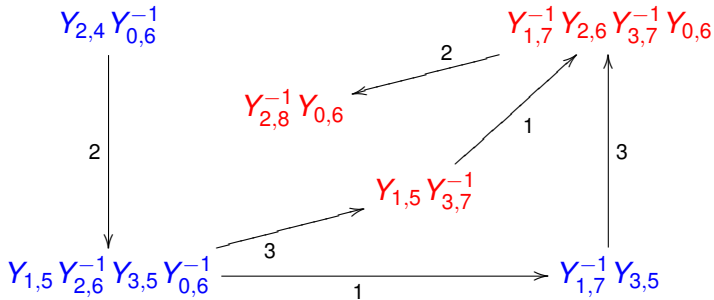
Mathieu Mansuy











On définit les applications

- $\tau_{2,-\delta} : \mathcal{M} \rightarrow \mathcal{M}$  par

$$\tau_{2,-\delta} \left( e^\nu \prod Y_{i,n}^{u_{i,n}} \right) = e^{\nu-\delta} \prod Y_{i,n+2}^{u_{i,n}},$$

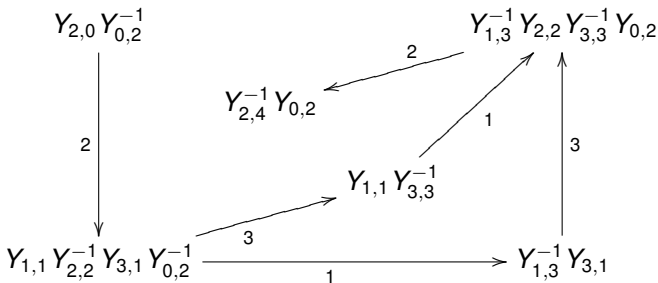
- $\phi : \mathcal{M} \rightarrow \mathcal{M}$  par

$$\phi \left( \prod Y_{i,n}^{u_{i,n}} \right) = \prod Y_{i+1,n+1}^{u_{i,n}}.$$

$\tau_{2,-\delta}$  et  $\phi$  sont des automorphismes de  $\mathcal{M}(Y_{2,0} Y_{0,2}^{-1})$ .

**Remarque**  $\phi$  agit sur  $\mathcal{M}(Y_{2,0} Y_{0,2}^{-1})$  comme un vissage. C'est l'opérateur de promotion du cristal  $\mathcal{M}(Y_{2,0} Y_{0,2}^{-1})$ .

# $\mathcal{U}_q^{v,0}(sl_4^{tor})$ -module associé



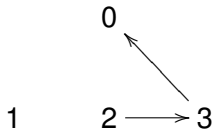
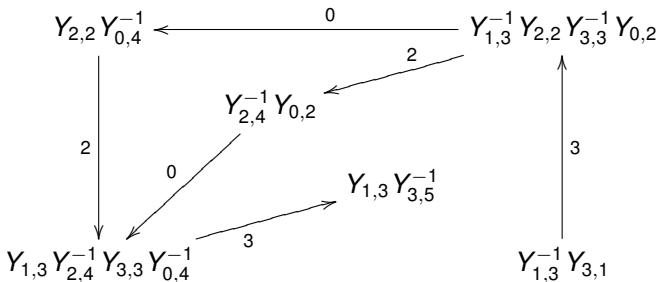
0

1  $\longrightarrow$  2  $\longrightarrow$  3

$$\begin{aligned} \chi_q(V_0(Y_{2,0})) &= Y_{2,0} + Y_{1,1} Y_{2,2}^{-1} Y_{3,1} + Y_{1,1} Y_{3,3}^{-1} \\ &\quad + Y_{1,3}^{-1} Y_{3,1} + Y_{1,3}^{-1} Y_{2,2} Y_{3,3}^{-1} + Y_{2,4}^{-1} \end{aligned}$$

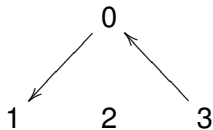
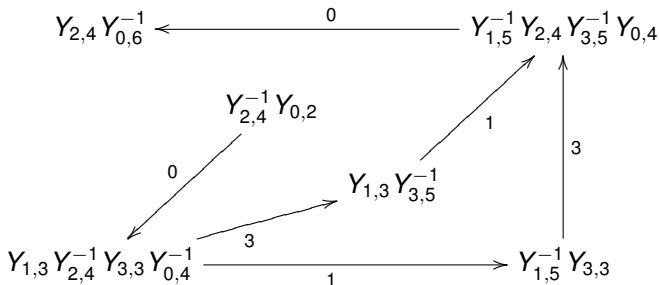


# $\mathcal{U}_q^{v,1}(sl_4^{tor})$ -module associé



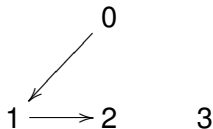
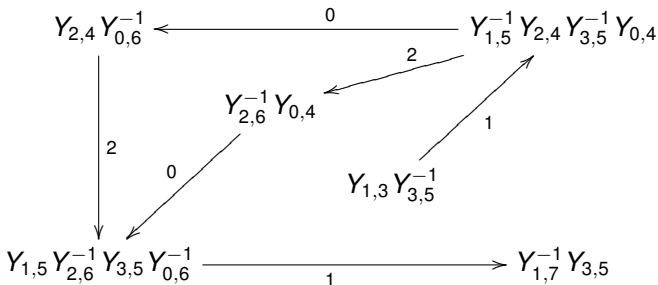
$$\chi_q(V_1(Y_{3,1})) = Y_{3,1} + Y_{2,2} Y_{3,3}^{-1} Y_{0,2} + Y_{2,2} Y_{0,4}^{-1} + Y_{2,4}^{-1} Y_{0,2} + Y_{2,4}^{-1} Y_{3,3}^{-1} Y_{0,4}^{-1} + Y_{3,5}^{-1}$$

# $\mathcal{U}_q^{v,2}(sl_4^{tor})$ -module associé



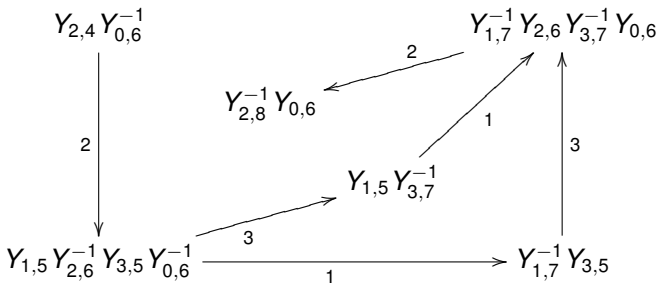
$$\begin{aligned} \chi_q(V_2(Y_{0,2})) = & Y_{0,2} + Y_{1,3} Y_{3,3} Y_{0,4}^{-1} + Y_{1,5}^{-1} Y_{3,3} \\ & + Y_{1,3} Y_{3,5}^{-1} + Y_{1,5}^{-1} Y_{3,5}^{-1} Y_{0,4} + Y_{0,6}^{-1} \end{aligned}$$

# $\mathcal{U}_q^{v,3}(sl_4^{tor})$ -module associé



$$\begin{aligned} \chi_q(V_3(Y_{1,3})) = & Y_{1,3} + Y_{1,5}^{-1} Y_{2,4} Y_{0,4} + Y_{2,6}^{-1} Y_{0,4} \\ & + Y_{2,4} Y_{0,6}^{-1} + Y_{1,5} Y_{2,6}^{-1} Y_{0,6}^{-1} + Y_{1,7}^{-1} \end{aligned}$$

# $\mathcal{U}_q^{v,0}(sl_4^{tor})$ -module associé



0

1  $\longrightarrow$  2  $\longrightarrow$  3

$$\begin{aligned} \chi_q(V_0(Y_{2,4})) &= Y_{2,4} + Y_{1,5} Y_{2,6}^{-1} Y_{3,5} + Y_{1,5} Y_{3,7}^{-1} \\ &\quad + Y_{1,7}^{-1} Y_{3,5} + Y_{1,7}^{-1} Y_{2,6} Y_{3,7}^{-1} + Y_{2,8}^{-1} \end{aligned}$$