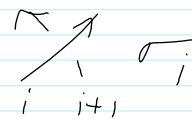


Verifying Artin / Bardakov

September-19-14 2:33 PM

$$\sigma_i \mapsto \begin{cases} x_i \mapsto x_i x_{i+1} x_i^{-1} \\ x_{i+1} \mapsto x_i \end{cases} \quad \text{or} \quad \begin{cases} x_i \mapsto x_i q^{-1} x_{i+1} q x_i^{-1} \\ x_{i+1} \mapsto q x_i q^{-1} \end{cases}$$

$$\tau_i \mapsto \begin{cases} x_i \mapsto q x_{i+1} q^{-1} \\ x_{i+1} \mapsto q^{-1} x_i q \end{cases} \quad \text{or} \quad \begin{cases} x_i \mapsto x_{i+1} \\ x_{i+1} \mapsto x_i \end{cases}$$



Artin:

$$1 // \sigma_1 \sigma_2 \sigma_1 = 12\bar{1} // \sigma_2 \sigma_1 = 123\bar{2}\bar{1} // \sigma_1 = 12\bar{1} | 3\bar{1} | 2\bar{1} = 123\bar{2}\bar{1}$$

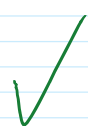
$$1 // \sigma_2 \sigma_1 \sigma_2 = 1 // \sigma_1 \sigma_2 = 12\bar{1} // \sigma_2 = 123\bar{2}\bar{1}$$

$$2 // \sigma_1 \sigma_2 \sigma_1 = 1 // \sigma_2 \sigma_1 = 1 // \sigma_1 = 12\bar{1}$$

$$2 // \sigma_2 \sigma_1 \sigma_2 = 23\bar{2} // \sigma_1 \sigma_2 = 13\bar{1} // \sigma_2 = 12\bar{1}$$

$$3 // \sigma_1 \sigma_2 \sigma_1 = 3 // \sigma_2 \sigma_1 = 2 // \sigma_1 = 1$$

$$3 // \sigma_2 \sigma_1 \sigma_2 = 2 // \sigma_1 \sigma_2 = 1 // \sigma_2 = 1$$



Bardakov:

$$1 // \sigma_1 \sigma_2 \sigma_1 = 1\bar{q}2\bar{q}1 // \sigma_2 \sigma_1 = 1\bar{q}2\bar{q}1\bar{q} // \sigma_1 = 12\bar{1} | 3\bar{1} | 2\bar{1} = 123\bar{2}\bar{1}$$

$$1 // \sigma_2 \sigma_1 \sigma_2 = 1 // \sigma_1 \sigma_2 = 12\bar{1} // \sigma_2 = 123\bar{2}\bar{1}$$

$$2 // \sigma_1 \sigma_2 \sigma_1 = 1 // \sigma_2 \sigma_1 = 1 // \sigma_1 = 12\bar{1}$$

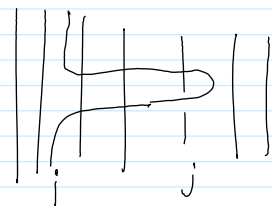
$$2 // \sigma_2 \sigma_1 \sigma_2 = 23\bar{2} // \sigma_1 \sigma_2 = 13\bar{1} // \sigma_2 = 12\bar{1}$$

$$3 // \sigma_1 \sigma_2 \sigma_1 = 3 // \sigma_2 \sigma_1 = 2 // \sigma_1 = 1$$

$$3 // \sigma_2 \sigma_1 \sigma_2 = 2 // \sigma_1 \sigma_2 = 1 // \sigma_2 = 1$$

$$\sigma_{ij} = \tau_j \tau_{j+1} \dots \tau_{j-2} \sigma_{j-1} \tau_{j-1} \dots \tau_j$$

$$x_k // \sigma_{ij} = \begin{cases} x_k & = k & k \neq i, j \\ x_j q^{-1} x_i q x_j^{-1} & = j \bar{q} i \bar{q} & k = i \\ q x_j q^{-1} & = q j \bar{q} & k = j \end{cases}$$



$$1 // \sigma_{12} \sigma_{13} \sigma_{23} = 2 \bar{q} 1 \bar{q} 2 // \sigma_{12} \sigma_{13} = 2 \bar{q} 3 \bar{q} 1 \bar{q} 3 \bar{q} 2 // \sigma_{23}$$

$$= 3 \bar{v} 2 \bar{v} \bar{v} \bar{v} \bar{v} \bar{v} 1 \bar{v} \bar{v} \bar{v} \bar{v} \bar{v} \bar{v} 2 \bar{v} \bar{v}$$

$$= 3 \bar{v} 2 \bar{v} 1 \bar{v} 2 \bar{v} \bar{v}$$



$$1 // \sigma_{23} \sigma_{13} \sigma_{12} = 1 // \sigma_{13} \sigma_{12} = 3 \bar{v} 1 \bar{v} \bar{v} // \sigma_{12} = 3 \bar{v} 2 \bar{v} 1 \bar{v} 2 \bar{v} \bar{v}$$

$$2 // \sigma_{12} \sigma_{13} \sigma_{23} = 9 2 \bar{v} // \sigma_{13} \sigma_{23} = 4 2 \bar{v} // \sigma_{23} = 9 3 \bar{v} 2 \bar{v} \bar{v} \bar{v}$$

$$2 // \sigma_{23} \sigma_{13} \sigma_{12} = 3 \bar{v} 2 \bar{v} \bar{v} // \sigma_{13} \sigma_{12} = 9 3 \bar{v} \bar{v} 2 \bar{v} \bar{v} \bar{v} \bar{v} // \sigma_{12} \\ = 9 3 \bar{v} \bar{v} \bar{v} 2 \bar{v} \bar{v} \bar{v} \bar{v} \bar{v}$$



$$3 // \sigma_{12} \sigma_{13} \sigma_{23} = 3 // \sigma_{13} \sigma_{23} = 9 3 \bar{v} // \sigma_{23} = 9^2 3 \bar{v}^2$$



$$3 // \sigma_{23} \sigma_{13} \sigma_{12} = 9 3 \bar{v} // \sigma_{13} \sigma_{12} = 9^2 3 \bar{v}^2 // \sigma_{12} = 9^2 3 \bar{v}^2$$

$$1 // \sigma_{13} \sigma_{23} = 3 \bar{v} 1 \bar{v} \bar{v} // \sigma_{23} = 9 3 \bar{v}^2 1 \bar{v}^2 \bar{v}$$

$$1 // \sigma_{23} \sigma_{13} = 1 // \sigma_{13} = 3 \bar{v} 1 \bar{v} \bar{v}$$

No VC

$$1 // \sigma_{12} \sigma_{13} = \dots \quad \text{No OC.}$$

Is this related to the Hopf fibration?