

Diagrammatic proof of the braid relation:

Left side:  $D_3^{u,u'} * D_1^{u',u'''}$

Right side:  $D_1^{u,u''} * D_3^{u'',u'''}$

Diagrammatic proof of the identity  $D_3^{u,u'} * e_2^{u'} = e_2^u * D_3^{u,u'}$ :

Left side:  $D_3^{u,u'} * e_2^{u'}$

Right side:  $e_2^u * D_3^{u,u'}$