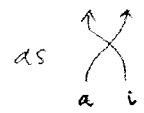



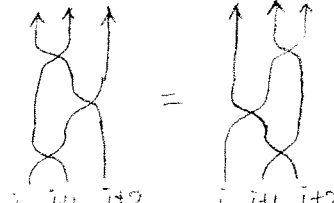


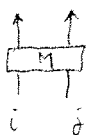
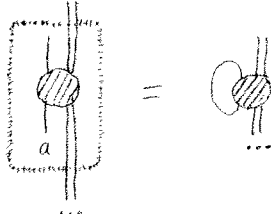
[GRS]
 exercise 27
 partial solution I:
 graphical proofs of
 (2.158)
 (2.159)
 (2.163)
 J. Lamers

Denote P_{ai} as . (since $P_{ai}^2 = 1$, $\curvearrowright = \curvearrowleft =: \curvearrowright$.)




Then the result of the following three compositions is clearly the same:

$P_{ai}P_{aj} =$  , $P_{aj}P_{ij} =$  , $P_{ij}P_{ai} =$  ,

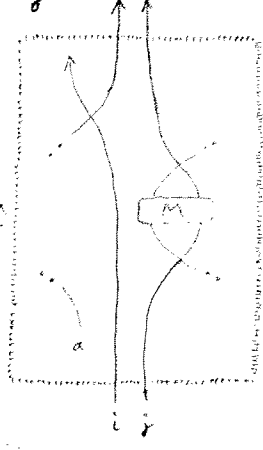
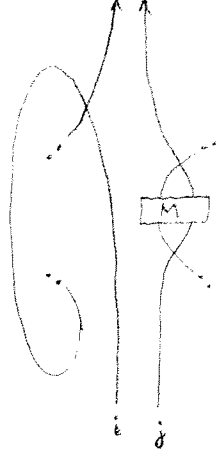

and the YBE looks like  .

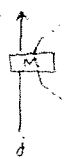
Denote M_{ij} as  , and tr_a  .


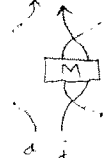
Then

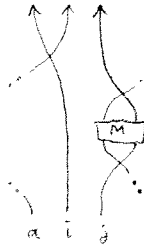
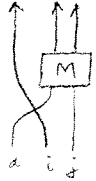
$tr_a(P_{aj}) = tr_a$  $=$  $=$  $= 1_j$,

and

$tr_a(P_{ai}M_{aj}) = tr_a$  $=$  $=$  $= M_{ij}$.

since  gives M_{ja} rather than M_{aj} ,

here we use that $M_{aj} =$  $=$  $= P_{aj}M_{ja}P_{aj}$

(Alternatively, first use that $P_{ai}M_{aj} =$  $=$  $= M_{ij}P_{ai}$.)