Listing S1: A flat Kappa model of the chemotaxis switch ring. This is part of a larger model by Vincent Danos, reproduced with permission from the author.

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# 8 flips (aka conformational change)
# 4 P flips without CheY - note that P[f^0] is favoured 2/1
' flip 000' P[f^0,y!1],P[x!1,f^0,y!2,s],P[x!2,f^0] → P[f^0,y!1],P[x!1,f^0,y!2,s],P[x!2,f^0] @ 1
' bflip 000' P[f^0,y!1],P[x!1,f^0,y!2,s],P[x!2,f^0] → P[f^0,y!1],P[x!1,f^0,y!2,s],P[x!2,f^0] @ 200

' flip 100' P[f^-1,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^0] → P[f^-1,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^0] @ 1
' bflip 100' P[f^-1,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^0] → P[f^-1,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^0] @ 2

' flip 001' P[f^0,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^0] → P[f^0,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^0] @ 1
' bflip 001' P[f^0,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^0] → P[f^0,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^0] @ 2

' flip 101' P[f^-1,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^-1] → P[f^-1,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^-1] @ 100
' bflip 101' P[f^-1,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^-1] → P[f^-1,y!1],P[x!1,f^-1,y!2,s],P[x!2,f^-1] @ 2

' flip 000 b' P[f^0,y!1],P[x!1,f^-0,y!2,s!],P[x!2,f^0] → P[f^0,y!1],P[x!1,f^-0,y!2,s!],P[x!2,f^0] @ 10
' bflip 000 b' P[f^0,y!1],P[x!1,f^-0,y!2,s!],P[x!2,f^0] → P[f^0,y!1],P[x!1,f^-0,y!2,s!],P[x!2,f^0] @ 200

' flip 100 b' P[f^-1,y!1],P[x!1,f^-0,y!2,s!],P[x!2,f^0] → P[f^-1,y!1],P[x!1,f^-0,y!2,s!],P[x!2,f^0] @ 10
' bflip 100 b' P[f^-1,y!1],P[x!1,f^-0,y!2,s!],P[x!2,f^0] → P[f^-1,y!1],P[x!1,f^-0,y!2,s!],P[x!2,f^0] @ 2

' flip 001 b' P[f^0,y!1],P[x!1,f^-1,y!2,s!],P[x!2,f^0] → P[f^0,y!1],P[x!1,f^-1,y!2,s!],P[x!2,f^-1] @ 10
' bflip 001 b' P[f^0,y!1],P[x!1,f^-1,y!2,s!],P[x!2,f^0] → P[f^0,y!1],P[x!1,f^-1,y!2,s!],P[x!2,f^-1] @ 2

' flip 101 b' P[f^-1,y!1],P[x!1,f^-1,y!2,s!],P[x!2,f^-1] → P[f^-1,y!1],P[x!1,f^-1,y!2,s!],P[x!2,f^-1] @ 100
' bflip 101 b' P[f^-1,y!1],P[x!1,f^-1,y!2,s!],P[x!2,f^-1] → P[f^-1,y!1],P[x!1,f^-1,y!2,s!],P[x!2,f^-1] @ 2
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