This is our goal:

for(y : <logicalFormula> <- x)P

P|Q

a_{TBarb} = for(y <- x)[y]1 | x!([]2) - comm(x, \y.[y]1, []2) -> [y]1{ @[]2 / y }

a_{TSend} = for(y <- x)[y]1 | x!(Q) - comm(x, \y.[y]1, Q) -> [y]1{ @[]2 / y }

a_{TRecv} = for(y <- x)P | x!([]2) - comm(x, \y.P, []2) -> [y]1{ @[]2 / y }

a_{TK} = for(y <- x)K1[[y]1] | x!(K2[[]2]) - comm(x, \y.K1[[y]1], K2[[]2]) -> K1[[y]1]{ @K2[[]2] / y }

a_L = comm(x, \y.[y]1, []2)

L ::= a_L | a_L(-,Q) | a_L(P, -) | a_L o <K1,K2> | L|L

a = comm(x, c, t)

a o <K1, K2> = comm(x, \y.K1[y, c(y)], K2 o t)

sigma = unify(src(a_T), S)

K_{Par}[S] -> a_L -> K_{Par}[trgt(a_T) sigma]

K_{Par} = [] | P

sigma = unify(src(a_T), S)

K_{Par}[S] -> a_L -> K_{Par}[trgt(a_T) { K1[sigma([y]1)] / K1[y]1, K2[sigma([]2)] / K2[[]2] }

Examples

for(y <- x)0 | x!(5) for(y <- x)0 | x!(7) bisimilar

for(y <- x)y!(0) | x!(5) for(y <- x)y!(0) | x!(7) not bisimilar

t ⊙ u

a_T = []1 ⊙ []2 - ⊙([]1 , []2) -> f([]1 , []2)

[]1 ⊙ u - ⊙([]1 , u) -> f([]1 , u)

t ⊙ []2 - ⊙(t , []2) -> f(t , []2)

K1[[]1] ⊙ K2[[]2] - ⊙(K1[[]1] , K2[[]2]) -> f(K1[[]1] , K2[[]2])

a_L = []1 ⊙ []2

L ::= a_L | a_L(-,u) | a_L(t, -) | a_L o <K1,K2> | L⊙L

sigma = unify(src(a_T), s)

$K_⊙$[s] -> a_L -> $K_⊙$[t sigma]

$K_⊙$ = [] ⊙ v

Nota bene: in the current account … has no binding and the rho version only has asymmetric binding. But, ambient has no binding for interaction and the MeTTa calculus has symmetric binding. So … has 4 possibilities (no binding, binding left, binding right, binding both).