

```

Input: sequences  $X, Y, Z$ 
foreach  $n^{(X)} \in \mathcal{F}^{(X)}$  do                                     /* inside→outside sorted */
  foreach  $n^{(Y)} \in \mathcal{F}^{(Y)}$  do                                     /* inside→outside sorted */
    foreach  $n^{(Z)} \in \mathcal{F}^{(Z)}$  do                                     /* inside→outside sorted */
      foreach state  $a$  do
        bifurcProb  $\leftarrow 0$ ;
        foreach  $(n_L^{(X)}, n_R^{(X)}) \in b_{in}(n^{(X)})$  do
          foreach  $(n_L^{(Y)}, n_R^{(Y)}) \in b_{in}(n^{(Y)})$  do
            foreach  $(n_L^{(Z)}, n_R^{(Z)}) \in b_{in}(n^{(Z)})$  do
              bifurcProb  $+= \text{calcLBifurcProb}(a; \cdot)$ ;
              bifurcProb  $+= \text{calcRBifurcProb}(a; \cdot)$ ;
            end
          end
        end
         $\alpha_a(n^{(X)}, n^{(Y)}, n^{(Z)}) \leftarrow \text{calcTransEmitProb}(a; n^{(X)}, n^{(Y)}, n^{(Z)})$ ;
         $\alpha_a(n^{(X)}, n^{(Y)}, n^{(Z)}) += \text{bifurcProb}$ ;
        store  $\alpha_a(n^{(X)}, n^{(Y)}, n^{(Z)})$ ;
      end
    end
  end
end
return  $\alpha_a(n^{(X)}[0, L^{(X)}], n^{(Y)}[0, L^{(Y)}], n^{(Z)}[0, L^{(Z)}])$ ;

```