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Input: sequences  $X, Y, Z$ , Inside matrix  $\alpha$ 
foreach  $n^{(X)} \in \mathcal{F}^{(X)}$  do                                     /* outside→inside sorted */
  foreach  $n^{(Y)} \in \mathcal{F}^{(Y)}$  do                                     /* outside→inside sorted */
    foreach  $n^{(Z)} \in \mathcal{F}^{(Z)}$  do                                     /* outside→inside sorted */
      foreach state  $b$  do
        bifurcProb  $\leftarrow 0$ ;
        foreach  $(n_O^{(X)}, n_L^{(X)}) \in b_{out,L}(n^{(X)})$  do
          foreach  $(n_O^{(Y)}, n_L^{(Y)}) \in b_{out,L}(n^{(Y)})$  do
            foreach  $(n_O^{(Z)}, n_L^{(Z)}) \in b_{out,L}(n^{(Z)})$  do
              | bifurcProb  $+= \text{calcLBifurcProb}(b; \cdot)$ ;
            end
          end
        end
        foreach  $(n_O^{(X)}, n_R^{(X)}) \in b_{out,R}(n^{(X)})$  do
          foreach  $(n_O^{(Y)}, n_R^{(Y)}) \in b_{out,R}(n^{(Y)})$  do
            foreach  $(n_O^{(Z)}, n_R^{(Z)}) \in b_{out,R}(n^{(Z)})$  do
              | bifurcProb  $+= \text{calcRBifurcProb}(b; \cdot)$ ;
            end
          end
        end
         $\beta_b(n^{(X)}, n^{(Y)}, n^{(Z)}) \leftarrow \text{calcTransEmitProb}(b; n^{(X)}, n^{(Y)}, n^{(Z)})$ ;
         $\beta_b(n^{(X)}, n^{(Y)}, n^{(Z)}) += \text{bifurcProb}$ ;
        store  $\beta_b(n^{(X)}, n^{(Y)}, n^{(Z)})$ ;
      end
    end
  end
end

```