Input: Initial path X_0

$X^{\mathrm{o}} \leftarrow X_0$

for `trial < n_trials` **do**

Draw uniform direction $s \in \{-1, 1\}$: **return** s

Draw uniform $\hat{k}^{\mathrm{o}} \in [1, L(X^{\mathrm{o}})]$: **return** $\hat{k}^{\mathrm{o}}$

$x^{\mathrm{SP}} \leftarrow X^{\mathrm{o}}$ at $\hat{k}^{\mathrm{o}}$

if s `==` -1 **then**

$X^{\mathrm{fwd}} \leftarrow$ `IntegrateToState`(x^{SP})

$X^{\mathrm{n}} \leftarrow$ `ConcatenatePath`$(X^{\mathrm{o}}.X^{\mathrm{fwd}},)$

else

$X^{\mathrm{rv}} \leftarrow$ `IntegrateToState`$(\bar{x}^{\mathrm{SP}})$

$X^{\mathrm{n}} \leftarrow$ `ConcatenatePath`$(\bar{X}^{\mathrm{rv}}, X^{\mathrm{o}})$

end

$p_{\mathrm{acc}}(X^{\mathrm{o}} \to X^{\mathrm{n}}) \leftarrow H_{\mathrm{AB}}(X^{\mathrm{n}}) \min\left[1, \frac{L(X^{\mathrm{o}})}{L(X^{\mathrm{n}})}\right]$

if `rand`$() < p_{\mathtt{acc}}(X^{\mathtt{o}} \to X^{\mathtt{n}})$ **then**

$X^{\mathrm{o}} \leftarrow X^{\mathrm{n}}$

end

Add X^{o} to the ensemble

`trial` $\leftarrow$ `trial`$+1$

end