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**Algorithm 3:** EDGE: edge-based parallel BC

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...
 $\ell \leftarrow 0$ 
▷Forward phase
while cont = true do
    cont  $\leftarrow$  false
    ▷Forward-step kernel
    for each  $(u, v) \in E$  in parallel do
1      if  $d[u] = \ell$  then
          |   ... ▷same as vertex-based forward step
       $\ell \leftarrow \ell + 1$ 
...
▷Backward phase
while  $\ell > 1$  do
     $\ell \leftarrow \ell - 1$ 
    ▷Backward-step kernel
    for each  $(u, v) \in E$  in parallel do
        if  $d[u] = \ell$  then
2      |   if  $P_v[u] = 1$  then  $\delta[u] \stackrel{atomic}{\leftarrow} \delta[u] + \delta[v]$ 
    ▷Update bc values by using Equation (5)
...
```

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