Algorithm 2: VERTEX: vertex-based parallel BC

```
...
ℓ ← 0
▷Forward phase
while cont = true do
    cont ← false
    ▷Forward-step kernel
    for each u ∈ V in parallel do
1       if d[u] = ℓ then
2           for each v ∈ Γ(u) do
3               if d[v] = −1 then
                    d[v] ← ℓ + 1, cont ← true
                else if d[v] = ℓ − 1 then P_v[u] ← 1
4               if d[v] = ℓ + 1 then σ[v] ←(atomic) σ[v] + σ[u]
    ℓ ← ℓ + 1
...
▷Backward phase
while ℓ > 1 do
    ℓ ← ℓ − 1
    ▷Backward-step kernel
    for each u ∈ V in parallel do
        if d[u] = ℓ then
5           for each v ∈ Γ(u) do
6               if P_v[u] = 1 then δ[u] ← δ[u] + δ[v]
▷Update bc values by using Equation (5)
...
```