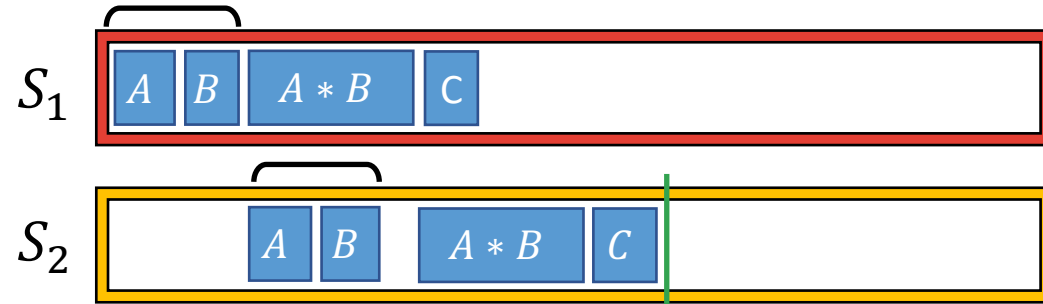
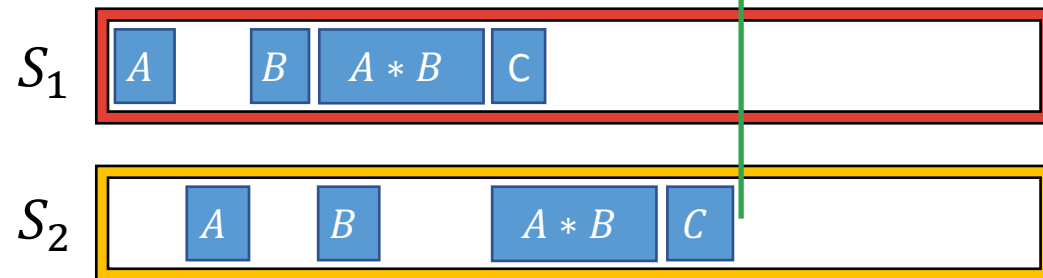


with enforced synchronization

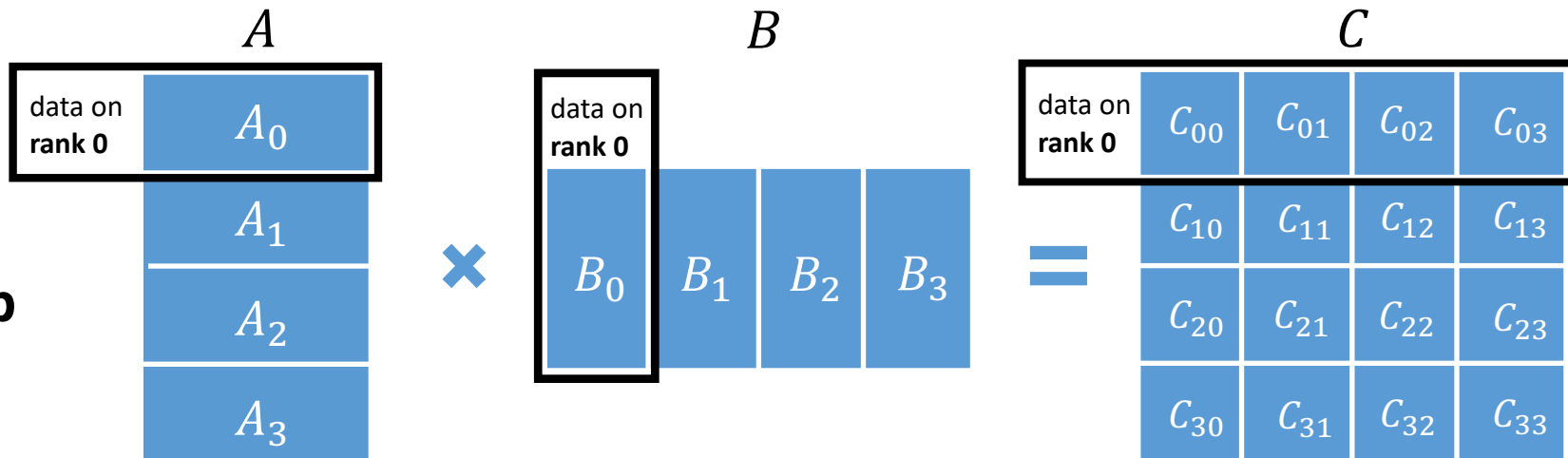


time difference



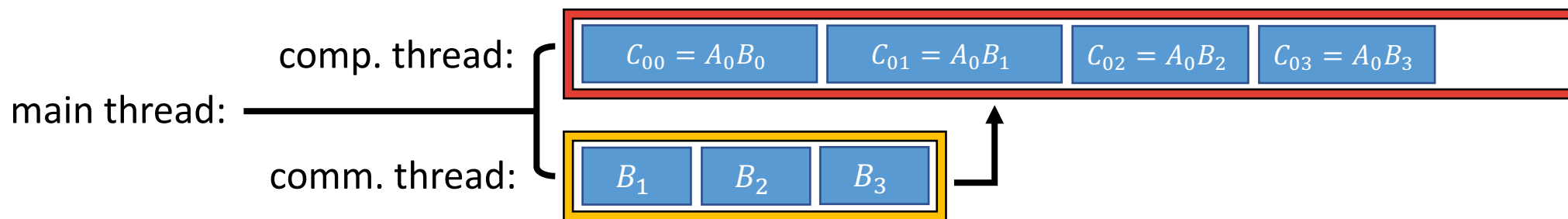
without enforced synchronization

$m$  — split  
 $\Rightarrow$  split  $n$   
 to overlap



rank 0:

with overlap of communication and computation

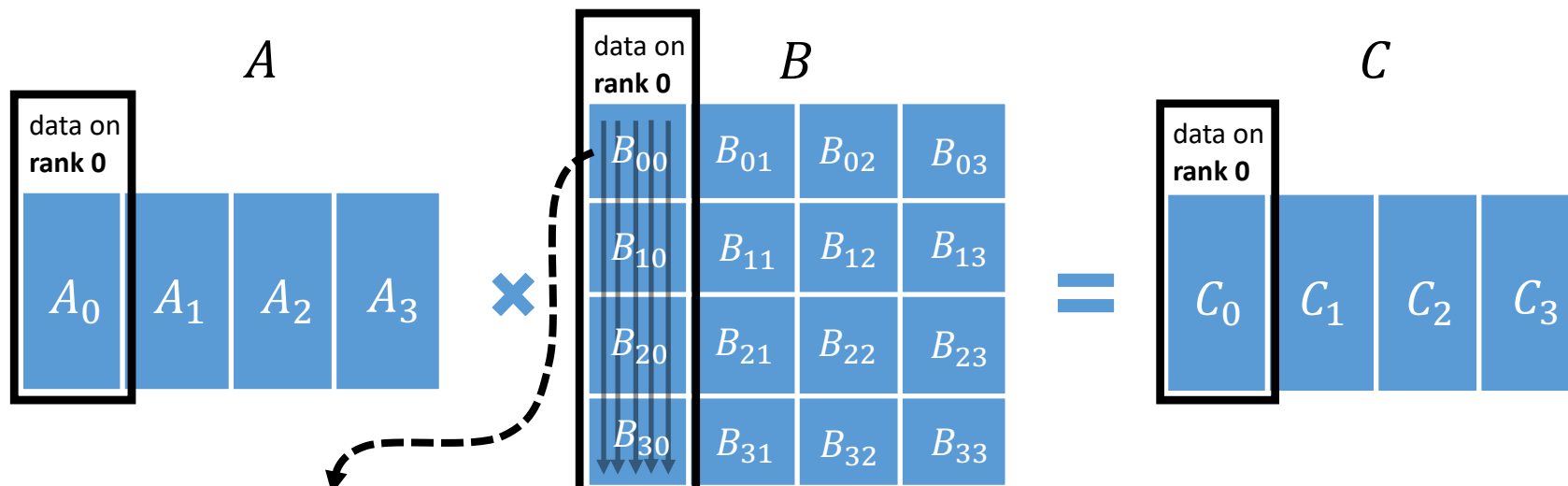


main thread: —



without overlap of communication and computation

$n$  – split  
 $\Rightarrow$  split  $k$   
 to overlap



**rank 0:**

intermediate buffer:  
 (reordering data)



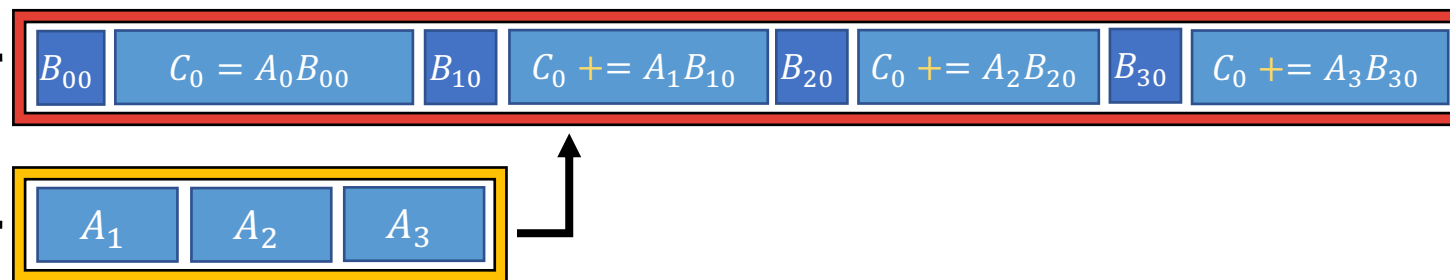
with overlap of communication and computation

reduction  
 (summation)

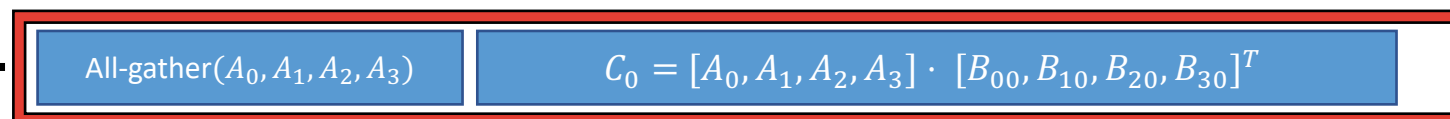


comp. thread:  
 main thread:

comm. thread:

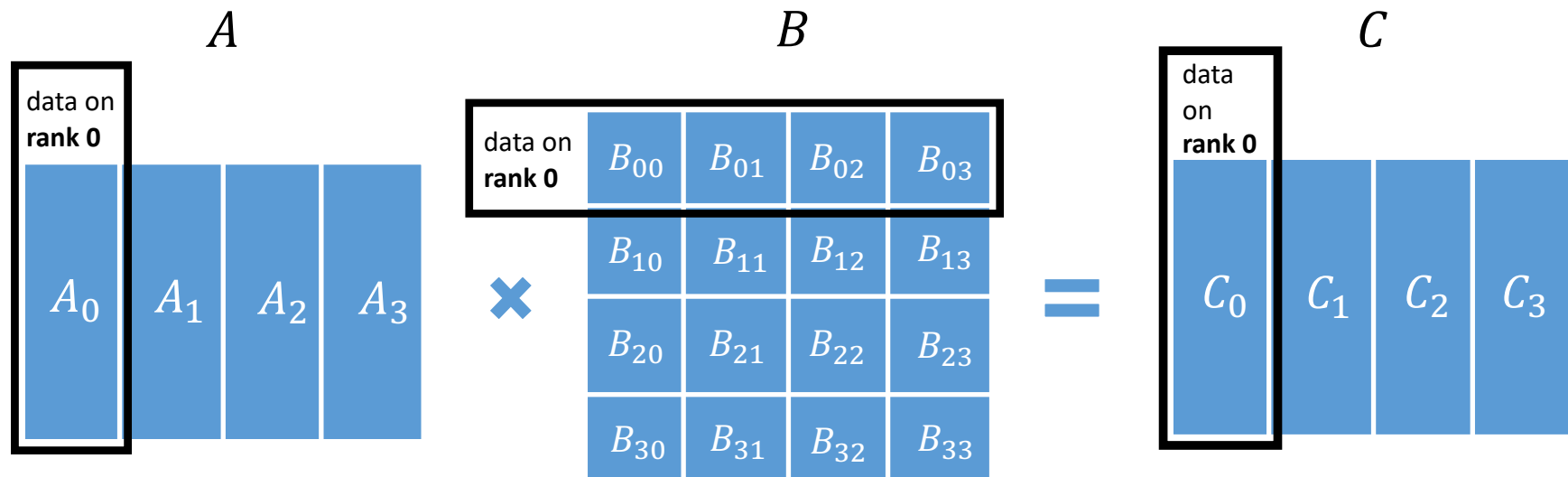


main thread:



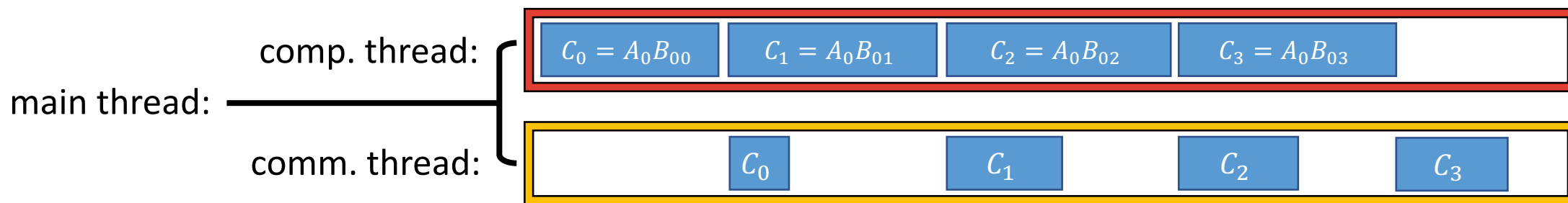
without overlap of communication and computation

$k$  – split  
 $\Rightarrow$  split  $n$   
 to overlap

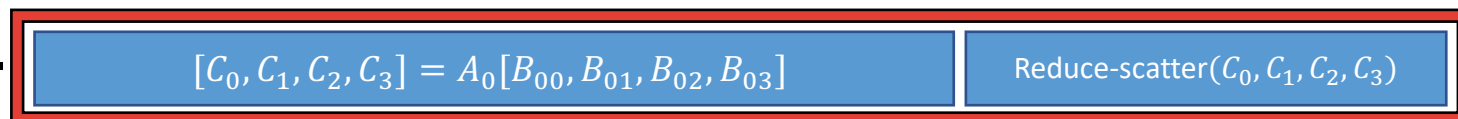


rank 0:

with overlap of communication and computation



main thread:



without overlap of communication and computation

