Algorithm 1: $Kernel - Checksum(\mathbf{H}_1, \mathbf{C}_1)$

Input: Packet segment, $\mathbf{H}_1$, from the pre-processed encoded packet, $\mathbf{H}$

Output: Checksum vector, $\mathbf{C}_1$

Step 1: READ $\mathbf{H}_1$ from global memory

Step 2: For each block of GPU in parallel, do segmentation on $\mathbf{H}_1$ by index set $\mathbf{I}_0, \mathbf{I}_1, ..., \mathbf{I}_{r(\mathbf{H}_1)}$

Step 3: WRITE segments to the shared memory of each block

Step 4: Perform module 2 (XOR) operation on the shared memory packet segment

Step 5: WRITE the result of Step 4, the checksum vector $\mathbf{C}_1[1], \mathbf{C}_1[2], ..., \mathbf{C}_1[r(\mathbf{H}_1)]$, in global memory