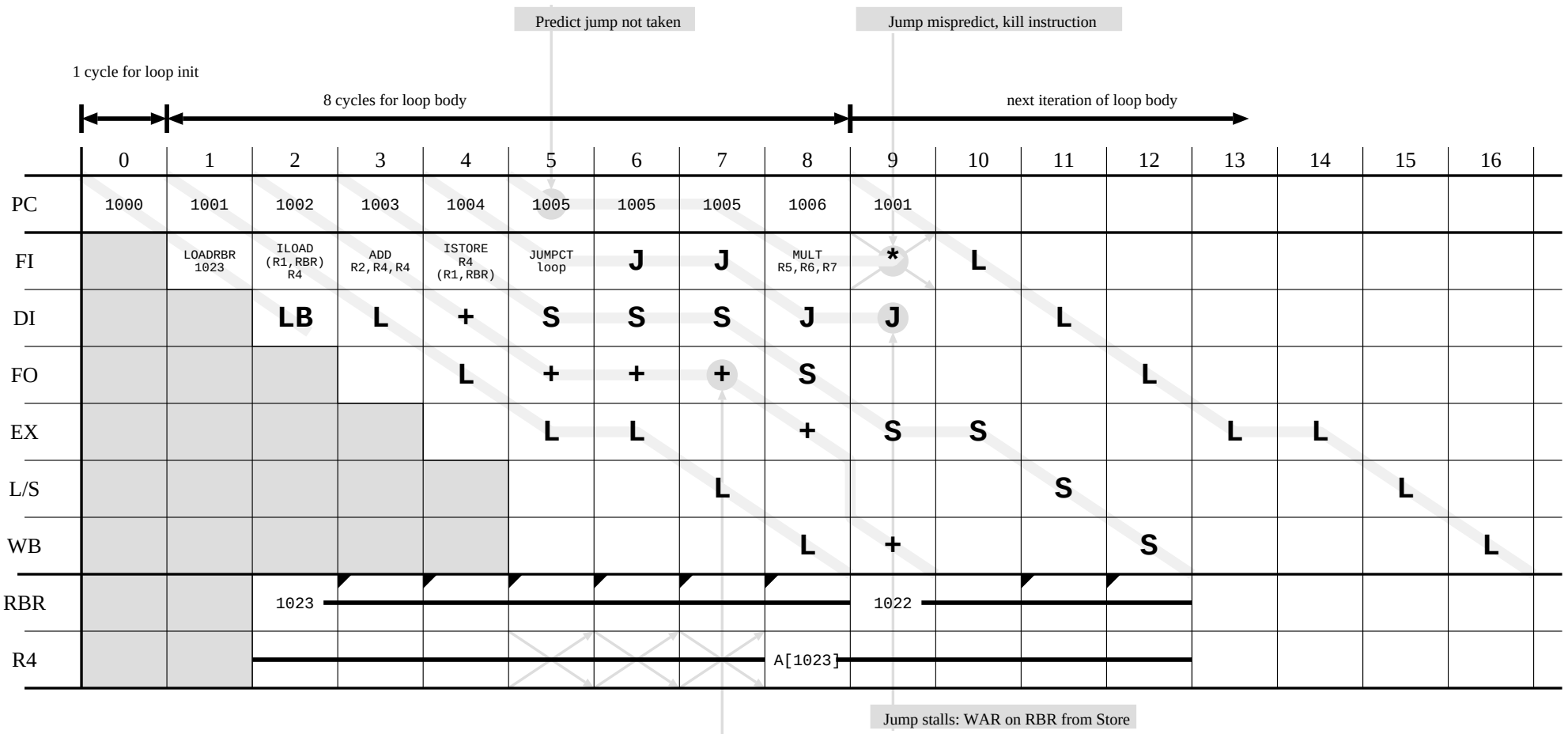
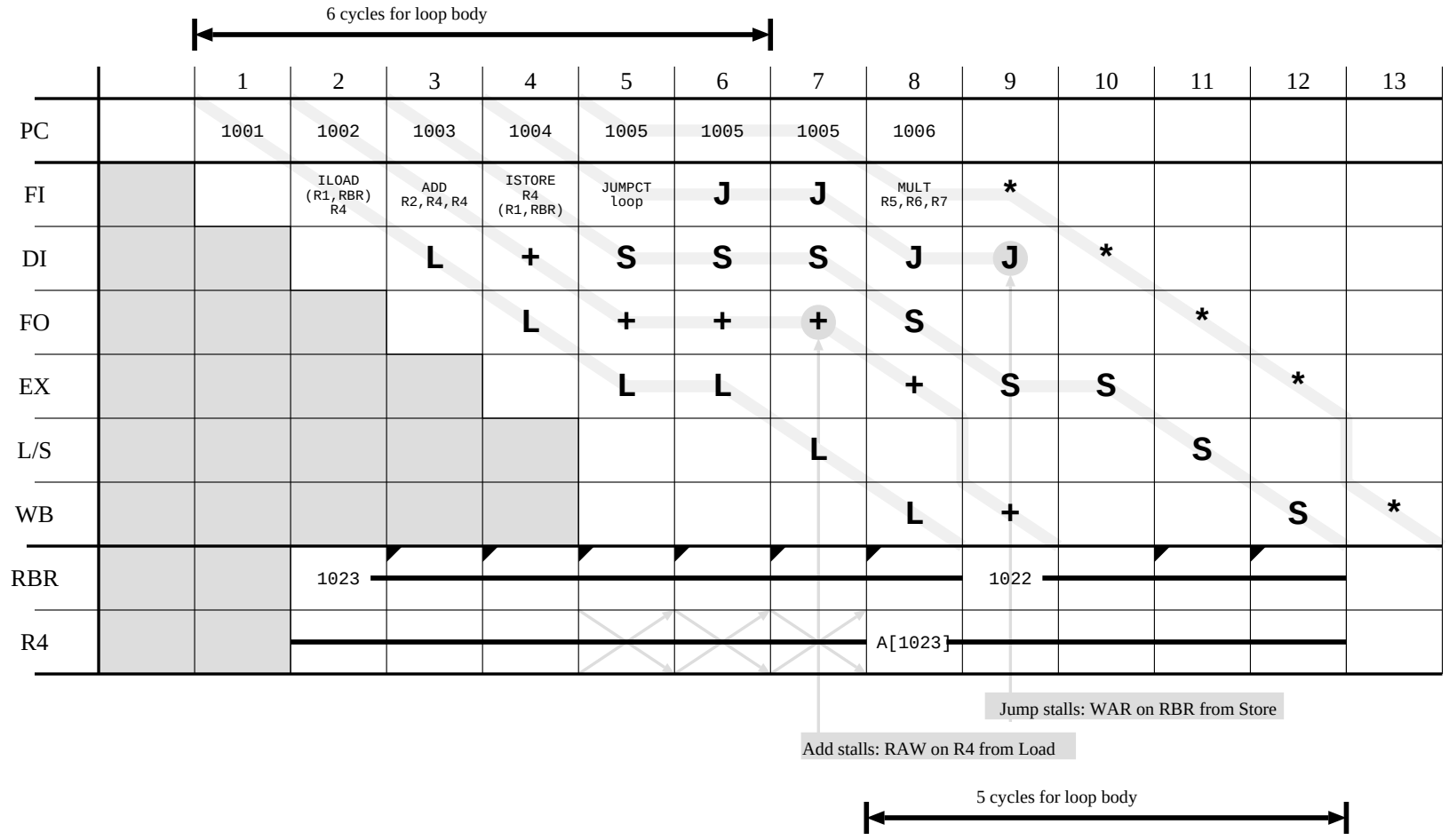


T_Init	Time to do loop initialization
#Inst_Init	Number of instructions in loop init
T_Body	Time to do loop body
#Inst_Body	Number of instructions in loop body
T_Done	Time to do last loop iteration
#Inst_Done	Number of instructions in last loop iteration

$$CPI = \frac{(T_Init + T_Body + T_Done)}{(\#Inst_Init + \#Inst_Body + \#Inst_Done)}$$

$$CPI = \frac{1 + 1022*8 + 1*6}{1 + 1022*4 + 1*4}$$

= 2.0 cycles/inst


6 cycles for loop body
1
2
3
4
5
6
7
8
9
10
11
12
13
PC
1001
1002
1003
1004
1005
1005
1005
1006
FI
ILOAD (R1,RBR) R4
ADD R2,R4,R4
ISTORE R4 (R1,RBR)
JUMPCT loop
MULT R5,R6,R7
DI
FO
EX
L/S
WB
RBR
1023
1022
R4
A[1023]
Jump stalls: WAR on RBR from Store
Add stalls: RAW on R4 from Load
5 cycles for loop body