The critical path is the thick blue line.
It starts from forwarding to ALU, and go to
the next_PC_logic

PC-way-0

predicted-next_PC.

tag-PC-E-0
tag-PC-E-1

BTB

BTB_write_data_E way 0

en-1   en-0

choose-E

nextPC

flush   next_PC

PC-E-0
PC-E-1
ctrl_signals-E
alu-out-E

PC

stall

multiplier

decoder   ctrl_signals

IF/ID

ID/EX

MUX

ALU

EX/MEM

M/W

PC   PC

IR

PC+4

Register file.

imm

rs1-data

rd-data-w0 0

rd-data-w 1

Forward

data_memory.

rs1-data-1

decoder   ctrl_signals

IF/ID

ID/EX

mux

ALU

EX/MEM

M/W

imm

multiplier.

stall

PC.