

First of all, I'm not sure if this post fits here; let me know if not.

Certain things are unclear to me with regards to either of the Casper FFG slashing conditions.

Condition I:

"...a validator must not publish two distinct votes for the same target height."

So this is not about whether two conflicting chains

are being validated by the same validator, only that she mustn't validate two blocks

of the same height, on any fork.

If I'm not mistaken, this lets a validator keep validating on two conflicting forks if she validates every  $2k^{\text{th}}$

block on fork A

and every  $(2k+1)^{\text{th}}$

on fork B

. (If Condition II applies cross-fork, then modify it to  $4k$

and  $4k+2$

.) Isn't that a problem?

Condition II:

...a validator must not vote within the span of its other votes.

A validator can split their stake into two smaller stakes, and pose as two separate entities. Sure, this halves her weight in one voting round, but she will still have a say, and twice as much stake colluding can get around this commandment.

1. It seems trivial, so why is this not a problem?
2. However, this does seem to lessen the effect of byzantine behavior. Why's the span only one block? Why not increase it to  $2/5/n$  blocks?