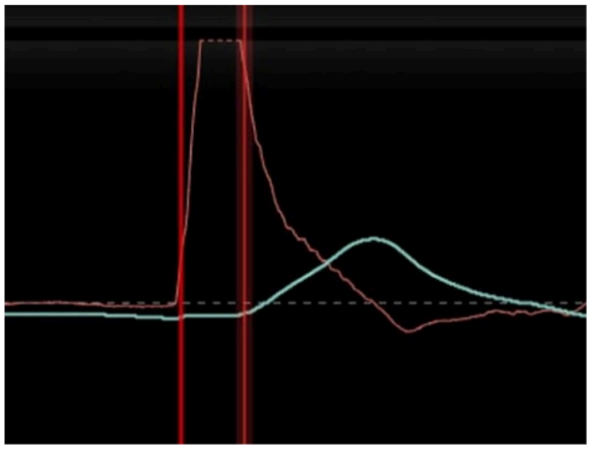
Iterm Relax explained

I term relax aims to inhibit **I** during fast manoeuvres by preventing it to further accumulate. Simply put I term relax will keep **I** constant during fast manoeuvres.

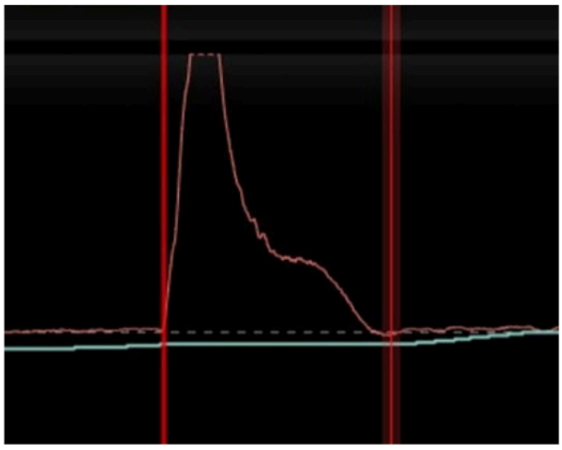
I term is relax rely on setpoint or gyro (**iterm_relax_type**) to detect such manoeuvres and preventing I term to accumulate further. To tune when I term accumulation should be suppressed a cutoff value (**iterm_relax_cutoff**) can be set. The lower the cutoff value the earlier I term accumulation is suppressed.

- In setpoint mode this suppression is based on the speed of the change in setpoint.
- In gyro mode this suppression is based on [TBD].

The following log traces demonstrate how different cutoff value affect I term relax (I value in green and setpoint in red).



Cutoff: 30



Cutoff: 15

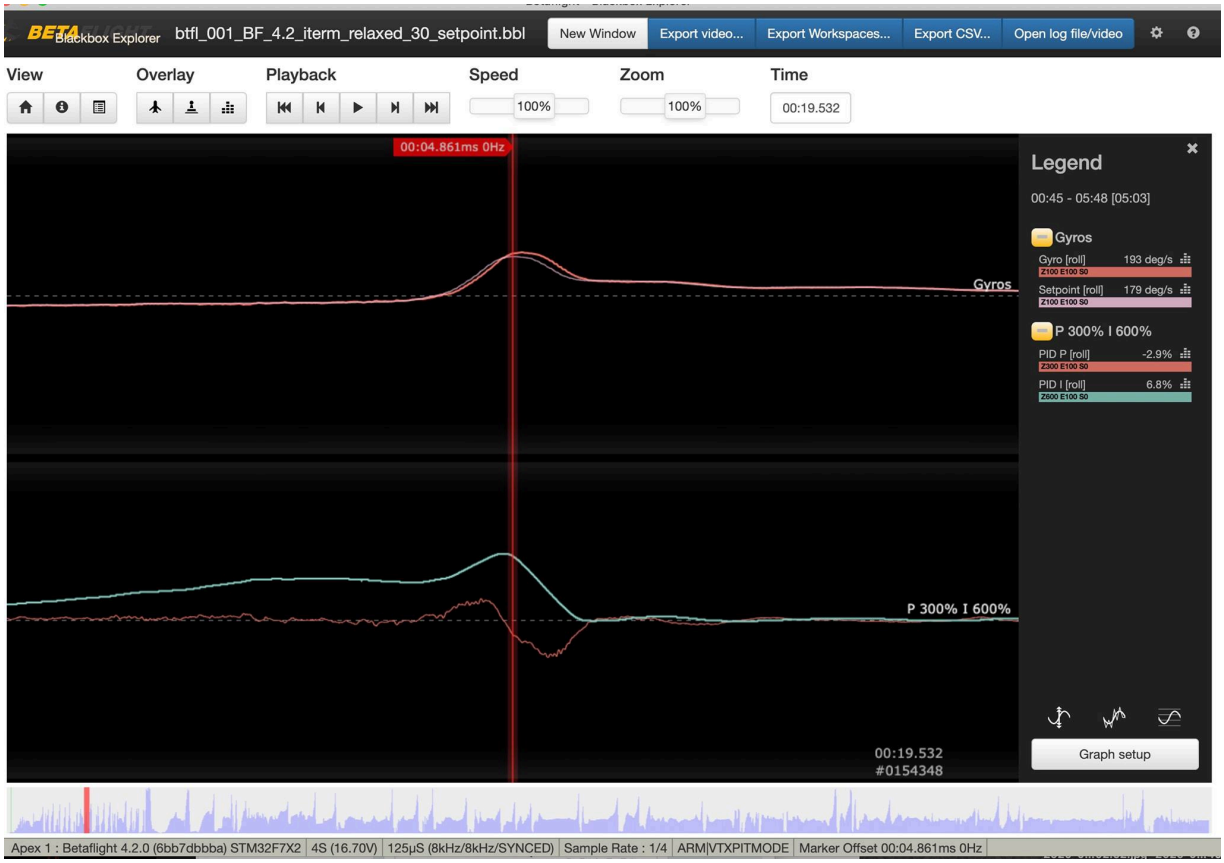
Freestyle Tune

For smooth flying such as freestyle when extremely fast and aggressive turns are rare I term can be relaxed as far as completely inhibit it during manoeuvres. Freestyle tuning might requires lower cutoff values, typically about 10-15.

Ideally I term should be 'locked' as the moves starts and come back on shortly after the sticks stop moving as illustrated in the log trace below.

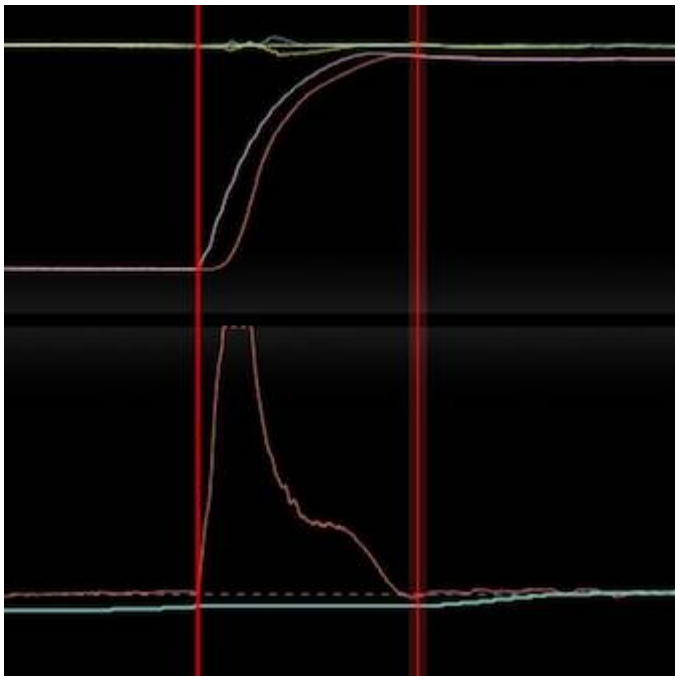
Racing Tune

When racing shorter I term accumulation suppression allows the quad to better track aggressive turns and quick blips. Racing tuning might requires higher cutoff values, typically about 20-30. For example, in the above log trace a higher cutoff value allows for better setpoint tracking on quick twitch inputs.

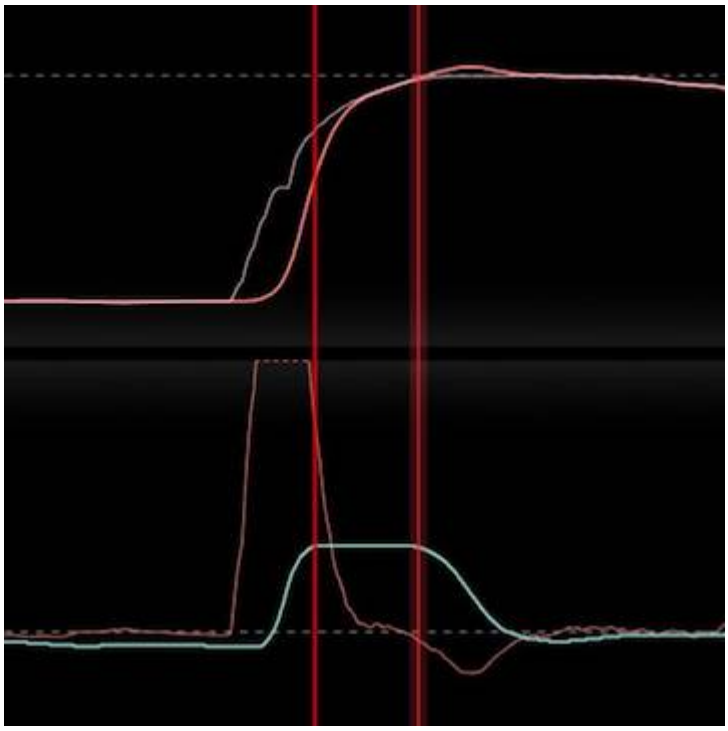


Known Drawbacks

Because I is 'locked' to the pre-existing value before entering a fast maneuver, when it comes back on the old I offset takes a little while to resolve.



Such effect is even more prominent with gyro mode, since the I term locking is slightly delayed compared to setpoint.



How to fix this? Increasing modes

This can be fixed using the **INCREASING** modes of the Iterm Relax. The Iterm Relax can be configured in *RP, RPY, RP_INC* and *RPY_INC* modes. The two modes that have the *_INC* in the name only lock the I accumulation from INCREASING, letting it to reduce if the I accumulation is not needed anymore.

By default Betaflight uses the *RP* mode, so if you want to remove this accumulation you can change it to *RP_INC*.

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