## To do (analysis)

* Circshift of modulation series
* CAPmod fit with DC
* Modulation time series with just 8 CAP\_ampl
* Plot phase modulation time courses
* plot in phase series CAP latency (converted to phase re. f2)
* plot avg modulation phase series
* left/right button to jump to next repeat of parameter set (only in chrono mode figure.)
* button to close all prmSet windows (as subfunction in plot\_prmSet.m; also to be called when closing main analysis window. Close only prmSet figures that are in original position. Ask whether to close all if other moved figures are open.)
* plot avg prmSet figures
* gb015: variable name “raw\_\*” is messed up
* gp013: raw wave shorter than later recordings
* gb012: raw wave shorter than later recordings and in $results struct. Timing issues due to longer and longer time to save growing struct!)
* plot\_prmSet: include 3f1-2f2 and in CM possibly also intermodulation between 2f1 and f2
* Phases from 2nd entry onwards because often no BT in 1st entry. Make plotting 1st an option in the GUI, or auto-detect (by SNR)? Better use NaN as first entry instead of (2:end)!
* Remove figure numbers and long path (plot\_prmSet.m) in figure titles.
* Plot\_prmSet.m: call OAE2Ida (‘dp\_tt22022…’) or monitor\_combi on condition of file name.
* Modulation series: show time course of minima and maxima.

# Improvements:

## Calibration

. H\_mic has DC component. Why?

. Higher noise floor in GP data than in GB data.

## Experiment files

. For level-steps and hypoxia, use limited parameter sets put work with #repeats (interval\_order) so that plot\_avg() shows indeed average over parameter set.

## Combi stimulus

. tone duration can be shortened by 20ms to allow recovery for CAP

. f2 primary to intense for CAP suppression. Ramp it in? Make initial f2-onset a parameter.

. lengthen primary onset ramp to improve frequency specificity?

. make SFOAE suppressor levels even higher (and spectrally closer? (currently 40 Hz) to make sure the two-tone intermodulation during suppression (i.e. the symmetry pan don of 2\*f\_supp-f2 => check 2\*suppr-f2 level) is higher than the expected SFOAE!

. Include also SFOAE modulation at f1.

. A version that measures CAP for f1 instead of f2? Possibly just with a short f2-burst followed by a f1 onset.

. Similar combi stimulus also for AM (or both, biasing and AM)

. suppress SFOAE during biasing to get entire SFOAE modulation pattern even if primary tone is modulated by hardware.

## Ida.m

. Save header field, or meta data outside of $results. It takes too long to load $results on startup (initialise)! Alternatively save what’s needed in filename.

. change $userID to %projectIP and save raw data in project’s (old: user’s) directory.

# Observations in Data

### 20220802T205328-gb017-combi\_01-21 (l\_BT growth)

* E.g. #56, in acoustic spectrum at f2, there is a 2nd modulation pattern that is 20 Hz down. This 20-Hz-down copy can be also seen very pronounced at 2f2-f1 and f2-f1. There is also al line at 13910 that should be 13930 if 5f2-4f1. (But 5f2-4f1 with f2-20Hz should be 5\*20Hz lower!) This is even more pronounced in RW spectrum! Is this here caused by a spontaneous emission near f2, or also seen in other recordings?
* Acoustic modulation around of f2 is different when f1 is present! OAE modulation sideband of f1 (like 2f1-f2 is primary difference down, this is primary difference up?), or Mic distortions?
* CM modulation around f2 lower by 10dB when f1 is present! (f2 carrier CM only lower by 1.5dB.) Is inter modulation product with f1 antiphase to the CM of f2 primary, and modulation as well? (Analyse phase difference of f2 carrier and modulation pattern!)
* Why is the BT not prominent in CM spectrum? (Is there a HP filter set?)