This folder contains codes to perform source localization using two methods: (1) Using the LORETA software developed by Dr. Pascual-Marqui (<https://www.uzh.ch/keyinst/>), and (2) using fieldtrip.

1. Using the LORETA-KEY software

* runAnalyzeAndSavePowerValuesIndividualSubject.m – saves the PSD and alpha/gamma power data in a local folder called analyzedData. This allows us to select subjects who have alpha/gamma power exceeding some threshold.
* saveGoodProtFlag.m and goodProtFlag.mat – For each subject, 2-3 protocols are run. This program generates a mat file called goodProtFlag which contains indices of good protocols for each subject.
* Data is then saved in a format that can be read by the LORETA software. The output of the Software is then saved as .txt files.
* runSaveRawLORETAData.m and saveRawLORETAData.m – read the .txt output files from the LORETA software and save mean source power and also t-stats locally.
* getVoxelInfo.m and voxelInfo.xls – the output of LORETA gives sources at 6239 locations. These programs return the coordinates of these locations.
* runDisplayData, displayData and getLORETAData – displays change in power, topoplots, and source maps at different frequency bands.

1. Using fieldTrip
   * PrepareSourceModel – This script generates the data (headmodel, sourcemodel and leadfield) required to perform source analysis. This includes the following:

- MRI preprocessing

- Head model creation

- Source model generation

- Lead field computation

Optionally, if the display flag is on, you can view the model

* + PerformSourceLocalization – For one subject ‘204NC’, it preprocesses the data and performs source localization using the precomputed files which was generated using PrepareSourceModel
  + ShowSimulationResults – Simulates the forward and inverse models for one subject.