Replication Data for:
Remove electrical stimulus artifact in local field potential recorded from subthalamic nucleus by using manifold denoising

Introduction:
Deep brain stimulation (DBS) is an effective treatment for Parkinson's disease (PD), and the DBS effects can be investigated by the analysis of local field potentials (LFPs) recorded through lead externalization. However, stimulus artifacts generated by high-intensity stimulation contaminate LFPs and might hamper the investigation. In this work, an algorithm based on manifold denoising idea is proposed, coined *Shrinkage and Manifold based Artifact Removal using Template Adaptation* (SMARTA), to remove the artifacts by deriving a specific template for each stimulus artifact and subtracting it from the signal. This semi-realistic dataset is used in our work for validating SMARTA. The semi-realistic signals are generated by adding artifacts recorded in an agar brain and LFPs recorded in PD patients without stimulation.

Data description:
The signals are stored in mat files. There are three variables in each file: 'x_add' (semi-realistic LFP during DBS), 'x_ori' (base LFP without stimulation) and 'fs' (sampling rate). The length of 'x_add' is about 60 s, and the stimulus artifacts are added on the period of 10 s to 50 s.