Readme for reproducing and analyzing results shown in the paper
"How transform fault shear influences where detachment faults form near mid-ocean ridges"

1) We use a 3D box-model setup. All phases such as air, rock, dikes, fracture zones and transform fault zones (the latter two if applicable) have certain differences in characteristics (e.g. density, viscosity, healing time, cohesion, friction angle,…). They each are defined within certain areas ("boxes") in which those specific characteristics are applied. Phase transitions occur when particles move in-and out of those boxes.
2) The initial temperature structure is an adapted halfspace-cooling model, which is only set in the beginning of the run.
3) We use a tapering, variable grid in *x* and *y*-direction and a variable grid in *z.* This is defined in the beginning of each input file.
4) Model runtime and the number of time steps output can be changed in the beginning of each input file.
5) The specifics for the solvers are all defined at the bottom of the input files.
6) We ran the models on 32 cores using 4 nodes on a high performance computer/cluster.
7) All features used for the paper are included in the master branch of LaMEM which can be found under https://bitbucket.org/bkaus/lamem/src/master/.
8) In order to run LaMEM, you will need to install a specific version of PETSC which is compatible with LaMEM. The information on which additional prerequisites LaMEM requires and how to install everything can be found here https://bitbucket.org/bkaus/lamem/wiki/Home.
9) Input files for the in the figures presented models are provided. They can be found under https://bitbucket.org/JanaNa/lamem/downloads/ with the respective names (e.g. *3D_M075.dat, 3D_M05.dat*, etc.)