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## “Fully-automated” clustering method for stress inversions (CluStress)

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As it is well-known, stress fields are responsible for earthquake formation. In order to analyse stress relations in a study area using focal mechanisms' (FMS) inversions, it is vital to consider three fundamental criteria:

- (1) The investigated area is characterized by a homogeneous stress field.
- (2) The earthquakes occur with variable directions on pre-existing faults.
- (3) The deviation of the fault slip vector from the shear stress vector is minimal (Wallace-Bott hypothesis).

The authors have attempted to develop a “fully-automated” algorithm to carry out the classification of the earthquakes as a prerequisite of stress estimations. This algorithm does not call for the setting of hyper-parameters, thus subjectivity can be reduced significantly and the running time can also decrease. Nevertheless, there is an optional hyper-parameter that is eligible to filter outliers, isolated points (earthquakes) in the input dataset.

In this presentation, they show the operation of this algorithm in case of synthetic datasets consisting of different groups of FMS and a real seismic dataset. The latter come from a survey area in the earthquake-prone Vrancea-zone (Romania). This is a relatively small region (around 30\*70 km) in the external part of SE-Carpathians where the distribution of the seismic events is quite dense and heterogeneous.

It shall be noted that though the initial results are promising, further developments are still necessary. The source codes are soon to be uploaded to a public GitHub repository which will be available for the whole scientific community.