

# Structural Analysis of Sangbast-Shandiz Fault Zone

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## Abstract

Sangbast-Shandiz fault zone with ~2 km wide, 57 km length, and NW-SE strike (N42°W) is located about 15 km in west of Mashhad city. That is one the major faults in the east of Binalud Mountain, and has a dextral activity with dip slip component. This dip slip activity is reverse at the north east of fault zone also has normal slip at the south west. Base on geological evidences can say that the start of thrusting in basement fault was in upper-Jurassic (Malm). After change of regional tectonic conditions and so, local change of pressure stress state from east-west direction to N30°E, the fault movement mechanism was changed to strike slip. This strike slip movement with direction of N40°W caused simple shear in Sangbast-Shandiz fault zone. Therefore, northwest of Sangbast- Shandiz fault zone is under compressional stress state while southeast is in releasing energy and growing state.

In this thesis, we investigated growth pattern of fault zone with geometrical analysis by using the regional geology features, geomorphological settings such as topography and stream deviation, and pattern of fractures in fault zone. Then historical and instrumental earthquakes studied by using the local seismograph network data and relocated earthquake data. Finally kinematical and dynamical analysis with paleostress studies was done. In result of this research the deformation condition in shear zone was determined and prepared a structural map of fault zone with paleostress states and structural model from Sangbast-Shandiz fault zone.

*Keywords:* Strike-slip fault, Fault tip damage zone, Paleo-stress, Garow springs, Binalud Mountain.