



Geometry and deformation path partitioning along the Zagros Thrust System, Iran

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The Zagros Thrust System with various components of strike-slip, oblique-slip thrusts imbricate fans and shear zones are well developed in the southwestern Iran. The Zagros Thrust System was previously considered to be a "Crush zone" or "Main Zagros thrust Zone" or the "Main Zagros Reverse" or the "Suture Zone". The Zagros Thrust System in this area consists of eight sheets of NW-striking, NE-dipping dextral strike-slip duplexes that are linked with imbricate fans and oblique-slip thrusts. The Zagros Thrust System is a portion of the internal zone of the Zagros orogenic belt. This internal zone is characterized by penetrative plastic deformation and metamorphism. Based on the kinematic vorticity number ($W_k=0.73\pm 0.02$) calculated from quartz porphyroclasts of the Goshti shear zones along the Zagros Thrust System, the estimated θ angle between the minimum instantaneous strain axis (ISA) and the transpressional zone boundary is 33° . The estimated α angle of the plate convergence or the flow apophysis of the displacement field is 25° . The presence of dominantly dextral shear sense indicators in the area is consistent with dextral inclined transpressional convergence. The mean estimated finite deformation (W_m) value indicates relative contributions of 47% pure shear and 53% simple shear for the deformation which involved both strike-slip and oblique slip displacements. In this inclined transpression, about 40% strike-slip partitioning was required to accommodate the finite strain and re-orientation of instantaneous strain.