



## **Kinematic vorticity analysis and mélange fabrics classification of the Zagros accretionary prism, Iran**

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The NW-SE trending Zagros accretionary prism in the southwestern Iran consist two units: The Hasan Abad upper sedimentary mélange and Seh-Ghalatoun lower metamorphic mélange along the Neyriz ophiolite. The upper sedimentary mélange fabrics including type-I mélange with S-, C-, and C'-type shear-band cleavage; type II mélange with stretching lineation defined by ribbons, stripes, rods of flattened lenses of greywacke or limestone. The lower metamorphic units fabrics display -, and -type porphyroclasts and quartz ribbon mylonites. The estimated kinematic vorticity number ( $W_k$ ) was calculated from rotation of porphyroclasts and orientation of finite strain ellipse long axis with respect to shear zone boundaries, quartz c-axis patterns using strain-ratio/quartz c-axis, the porphyroclast hyperbolic distribution method and rigid grain net (RGN). The kinematic vorticity number ( $W_k$ ) is an important to measure for quantifying components of pure shear ( $W_k=0$ ) to simple shear ( $W_k=1$ ) assuming steady-state deformation. Using these methods yields  $W$  values of 0.84. In natural system the vorticity of flow vary with position and time. In cases of non-steady state deformation, flow is appropriately characterized by the mean kinematic vorticity number ( $W_m$ ) in which  $W$  (instantaneous deformation. ( $W_k$ ) is equal to finite deformation ( $W_m$ ). The mean estimated finite deformation ( $W_m$ ) values indicates 39.5