



## **Classification and Mechanism of Transfer Fault in Complex Stress Field:an example from Dongying Depression,Bohai Bay Basin**

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**Abstract:** The transfer fault is a kind of structure that regulates the fault deformation of its two sides. During the development of the transfer fault, the tectonic stress field may change due to factors such as plate motions or volcanic processes, and the development and evolution of the transfer fault will also change. Therefore, study of tectonic stress field is of theoretical significance for the development and evolution of the transfer fault and its mechanism. According to the change of stress field, a new classification of transfer fault is proposed: Stretching/compressive transfer fault (formed by the strike-slip tectonics, accommodate the strike-slip effect in a stretching or compressive configuration); the strike-slip transfer fault (formed by the unbalanced stretch/compression, accommodate the stretching or compressive effect in a strike-slip configuration). Based on the 3D seismic data, through structural section interpretation, fault throw calculation, structural evolution analysis of balanced section and physical modeling of transfer fault, the formation mechanism of the strike-slip transfer fault in the Dongying Depression is studied. The results indicate that: (1) The transfer fault in the south of Dongying depression is a "V" shape, composed of Wangjiagang fault, Wang66 fault and its internal area. On place view, the faults show strike-slip configurations such as broom-like and parallel, at the end of the faults, they show strike-slip configurations such as broom-like and parallel. While on sectional view, they show stretch configurations such as step, "Y" shape and strike-slip configurations such as flower structures. This transfer fault belongs to strike-slip transfer fault; (2) The transfer fault were formed in period when the Kongdian formation deposited. It experienced the initiation of E1-2k, intensification stage of E2s4-E2s2, and formed in E2s1-E3d and N-Q. The main period of transfer fault formation is corresponded with the maximum extension difference in E2s4-E2s3 period; (3) The pre-existing structures laid the foundation for the transfer fault. The special strike-slip transfer fault was resulted mainly from the differential characteristics between the Baimianhe Fault and the Shicun Fault, the strike-slip action changed from sinistral to dextral in E2s3 also effected the formation of this transfer fault.