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Mohr Space in Andersonian Stress State and Its Application in Active Fault

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Plane with graphical orientation (dip direction and dip angle) can not be plotted directly in Mohr Space and coordinate transformation is needed. With the application of the Mohr Space theory, and analysis on the three types of stress states most common in lithosphere, mathematical relationship between normal stress (σ_n), shear stress (τ_n) and dip direction, dip angle of plane were established, and Andersonian Mohr Space, in which plane can be plotted directly, were prepared under three types of stress states (extension, strike-slip and compression). Then, the characteristics of Andersonian Mohr Space were analyzed, and the five aspects of its application in active fault are proposed, including: ①Determining normal stress and shear stress on any fault plane in space; ②Determining the

activity of fault when the fault orientation and value and orientation of three principal stress are given; ③Determining the relative activity and seismic risks of faults when the orientation of the three principal stress are known; ④Determining three principal stress values with active fault when principal stress orientations are given; ⑤Determining the possibility of fault activation when principal stress orientations are known. Because plane can be plotted directly in Andersonian Mohr Space with its geographical orientation, intuitive and convenient way are provided on stress and fault activation analysis, and there are broad application prospects.

Key words: Stress state, Mohr Space, Andersonian Mohr Space, active fault, stress analysis

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