

## Influence of Contact Conditions on Fretting Fatigue Under Spherical Contact

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This work analyzes the effect in fretting fatigue (stresses, stress intensity factor, eccentricity of the stick zone and estimated life) with spherical contact of several assumptions needed to calculate the stresses beneath the contact. These assumptions are: i) supposing plane stress or plane strain when introducing the bulk stress on the element; ii) taking or not taking into account the eccentricity of the stick zone due to the bulk stress. The stresses in the different conditions are compared using analytical solutions for this problem and using the Finite Element Method (FEM). The stress intensity factor is compared analytically using a weight function. The eccentricity of the stick zone is compared for plane stress and plane strain also analytically and with FEM. The influence on the estimated fretting fatigue life is studied using a model developed by the authors. It can be concluded that more realistic results and lower estimated lives are obtained using plane stress and taking into account the eccentricity

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