

## Behavior of concrete under Nonproportional biaxial fatigue stresses with one constant

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### Abstrak

In this paper, the behavior of concrete subjected to biaxial compression and uniaxial fatigue is studied. The tests are performed on 100 x 100 x 100 mm cube specimens. Three Lateral stress levels ( $\alpha$  is defined as the ratio of stress in the horizontal direction that keeps constant during the testing procedure to the uniaxial compressive strength) 0, 0.25 and 0.5 are performed in the tests. The experimental stress-strain curves have been achieved. Empirical Relationship are proposed for predicting the maximum stress level as a function of lateral stress and fatigue life. The experimental results show that an increase of the horizontal stress leads to a change of failure mode and an increase of the maximum vertical load-carrying capacity. Also, the observation of the failure modes indicates that concrete possesses similar failure patterns under monotonic and fatigue compression is presented. Comparisons of the theoretical stress-strain curves with the experimental data indicate a good agreement.