NEURAL NETWORKS METHOD APPLIED TO THE PROPERTY STUDY OF STEEL-CONCRETE COMPOSITE COLUMNS UNDER AXIAL COMPRESSION

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Abstract- ***In this paper, a new type of steel-concrete composite member, concrete-filled core steel tube with outer angle steel plank reinforced concrete stub column, is proposed and a series of nonlinear 3-D(three-dimensional) full-range numerical calculations under axial compression are carried out, some important factors are analyzed, such as the strength of the concrete, the steel tube and the angle steel, the volume ratio of the steel tube and the angle steel to the overall column, position coefficient(the ratio of the diameter of the core steel tube to the overall width of the column section). RBFNNs(Radial Basis Function Neural Networks) are employed for calculated the loading capacity of the concrete-filled core steel tube with outer angle steel plank reinforecd concret stub columns under axial compression, and the prediction results based on RBFNNS are compared with theoretical formula calculation results. The maximum and minimum error ratio of prediction is 12.32% and 4.17%, respectively.***

Index terms*:* Steel-concrete composite column, Angle steel plank, Core steel tube, Neural networks, RBFNNs