

Hysteretic Behavior of the Concrete Filled Circular CFRP-Steel Tubular (C-CFRP-CFST) Beam-Columns

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Summary

Based on analysis of the hysteretic experimental results of the concrete filled circular CFRP-steel tubular (C-CFRP-CFST) beam-columns, it shows that the deflection curves of all the specimens are close to half sinusoidal shape. The steel tube and the CFRP material can work concurrently both in longitudinal and transverse directions. Additionally, the longitudinal strain and the transverse strain at a same point have opposite action. Analysis indicates that there is no strength degradation. The axial compression ratio and strengthening factor of the longitudinal CFRP can enhance the strength and the stiffness of the members and they can also delay the stiffness degradation. However, they will decrease the ductility and the accumulated energy dissipation of the members. The axial compression ratio is beneficial to seismic behaviors to some extent.

