This paper presents a quasi-static hybrid simulation performed on a single component structure. Hybrid simulation is a substructural technique, where a structure is divided into two sections: a numerical section of the main structure and a physical experiment of the remainder. In previous cases, hybrid simulation has typically been applied to structures with a simple connection between the numerical model and physical test, e.g. civil engineering structures. In this paper, the method is applied to a composite structure, where the boundary is more complex i.e. 3 degrees of freedom. In order to evaluate the validity of the method, the results are compared to a test of the emulated structure – referred to here as the reference test. It was found that the error introduced by compliance in the load train was significant. Digital image correlation was for this reason implemented in the hybrid simulation communication loop to compensate for this source of error. Furthermore, the accuracy of the hybrid simulation was improved by compensating for communication delay. The test showed high correspondence between the hybrid simulation and the reference test in terms of overall deflection as well as displacements and rotation in the shared boundary.
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