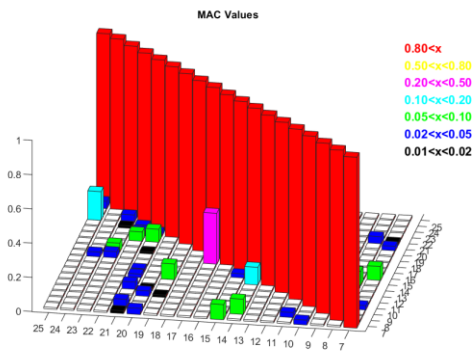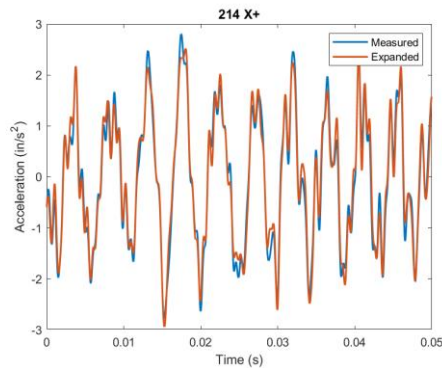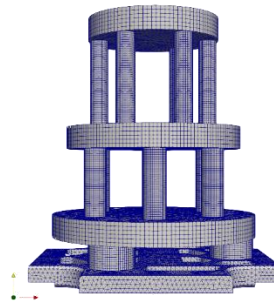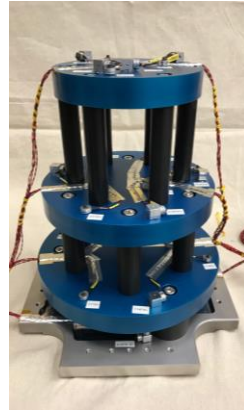## Sensitivity of Expansion to Model Accuracy

Expansion of test data from limited measured points has many applications for visualizing and predicting response. There are a variety of expansion methodologies, but the System Equivalent Reduction and Expansion Procedure (SEREP) is a highly accurate technique utilizing mode shapes from a finite element model. To investigate the use of SEREP to expand test results on a complex real-world structure, expansion of both the time response and test mode shapes is performed. To assess the applicability of expansion in a variety of real-world test scenarios, it is necessary to determine the level of perturbation or error the finite element model can sustain while maintaining accuracy in the expanded results. To this end, the structure model's boundary conditions, joint stiffness, and material properties were altered to determine the range of discrepancies allowable before the expanded results differed significantly from the measurements. The effect of improper implementations of the expansion procedure on accuracy is also explored.

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