Aerospace Engineering Master's Defense

Conceptual Fuselage Design with Direct CAD Modeling

School for Engineering of Matter, Transport and Energy

Benjamin Anderson

Advisor: Timothy Takahashi

abstract

In today's day and age, the use of automated technology is becoming increasingly prevalent. Throughout the aerospace industry, we see the use of automated systems in manufacturing, testing, and, progressively, in design. This paper focuses on the idea of automated structural analysis that can be directly coupled with parametric Computer Aided Drafting (CAD) and used to support aircraft conceptual design. This idea has been around for many years; however, with the advancement of CAD technology, it is becoming more realistic. Having the ability to input design parameters, analyze the structure, and produce a basic CAD model not only saves time in the design process, but provides an excellent platform to communicate ideas. The user has the ability to change parameters and quickly determine the effect on the structure. Coupling this idea with automated parametric CAD provides visual verification and a platform to export into Finite Element Analysis (FEA) for further verification.

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