A Comparative Analysis of the Effectiveness of Stealth Aircraft Design Methodologies

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This study is a continuation of our previous study which found the effects of stealth aircraft design on an aircraft's aerodynamic performance. Our results from last years project showed that stealth aircraft design constraints could have a positive and a negative effect on flight performance. This meant that the leading stealth aircraft design methodologies did not have a uniform effect on an aircraft's flight performance but it was varied. This year's study compared the effectiveness of these prominent stealth aircraft design methodologies. In order to make a complete and thorough comparison between the world’s most prominent fifth-generation air superiority stealth fighter aircraft. We constructed models of these aircraft using 3-D CAD software and the most accurate dimensions of the aircraft available. We then used Computational Fluid Dynamic Software to observe the behavior of these aircraft in subsonic and supersonic air flows. This testing method was chosen because we had complete control of the flow environment and could account for every variable that could affect our results. Using this software we were able to find the critical angle of attack for each aircraft in addition to our other data. This information is relevant due to the amount of money going into the development of these aircraft any advancement we can extract from these aircraft to improve commercial aircraft is a positive step forward for aeronautics and the world.

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