CLAIMS

1. An aircraft comprising monoblock flight control surfaces and a controller for dynamically limiting the inclinations of said flight control surfaces in said aircraft during a stall susceptibility condition, said controller operative to obtain the real-time calibrated airspeed of said aircraft, to obtain the real-time angle of attack (AOA) of said aircraft, to obtain the real-time sideslip angle (AOS) of said aircraft, to calculate the real-time local AOA and AOS of each of said flight control surfaces based on the obtained aircraft parameters, and to dynamically limit the inclination of each of said flight control surfaces independently, ~~relative to the local critical values according to~~ such that the calculated real-time local AOA and AOS of each of said flight control surfaces does not exceed the respective local critical values.

2. The aircraft of claim 1, wherein said aircraft is an unmanned aerial vehicle (UAV).

3. The aircraft of claim 1, wherein said aircraft is a V-tail aircraft.

4. The aircraft of claim 1, wherein said flight control surfaces comprises at least a left tail stabilizer and a right tail stabilizer~~, which are independently dynamically limited~~.

5. The aircraft of claim 1, further comprising temperature and precipitation sensors coupled with said controller, said temperature and precipitation sensors operative for detecting current weather conditions in said aircraft environment.

6. The aircraft of claim 1, wherein said stall susceptibility condition comprises icy conditions.

7. A method for dynamically limiting the inclinations of the monoblock flight control surfaces of an aircraft, the method comprising the procedures of:

activating dynamic limitation of said flight control surfaces if a stall susceptibility condition is detected in the current environment of said aircraft;

obtaining the real-time calibrated airspeed of said aircraft;

obtaining the real-time angle of attack (AOA) of said aircraft;

obtaining the real-time sideslip angle (AOS) of said aircraft;

calculating the real-time local AOA and AOS of each of said flight control surfaces, based on the obtained aircraft parameters; and

dynamically limiting the inclination of each of said flight control surfaces independently ~~relative to the local critical values according to~~ such that the calculated real-time local AOA and AOS of each of said flight control surfaces does not exceed the respective local critical values.

8. The method of claim 7, wherein said procedure of obtaining the real-time calibrated airspeed of said aircraft comprises measuring the real-time calibrated airspeed of said aircraft using an aircraft measurement apparatus.

9. The method of claim 7, wherein said procedure of obtaining the real-time calibrated airspeed of said aircraft comprises estimating the real-time calibrated airspeed of said aircraft if measured airspeed data is deemed unsuitable.

10. The method of claim 9, wherein said estimating is based on the density, engine RPM, measured throttle, measured pitch angle, and measured x-axis acceleration of said aircraft, using an open loop state-space model.

11. The method of claim 7, wherein said procedure of obtaining the real-time AOA of said aircraft comprises estimating said AOA based

on the measured z-axis acceleration and calibrated airspeed of said aircraft.

12. The method of claim 7, wherein said procedure of obtaining the real-time AOS of said aircraft comprises estimating said AOS based on the measured y-axis acceleration, true airspeed, calibrated airspeed, yaw rate, and rudder angle of said aircraft.

13. The method of claim 7, wherein said procedure of calculating the real-time local AOA and AOS of each of said flight control surfaces comprises estimating said local AOA and AOS based on previously calculated average FCS downwash angle and FCS sidewash angle, known FCS dihedral angle, and airspeed velocity components in the wind coordinate system axes.

14. The method of claim 7, further comprising the procedure of detecting current weather conditions in said aircraft environment using temperature and precipitation sensors.

15. The method of claim 7, wherein said aircraft is an unmanned aerial vehicle (UAV).