**Nonlinear Unsteady Aerodynamic modelling for Flight dynamics at Stall**

1. Introduction

1. -Motivation
2. -Literature
3. -Approach

2. Features of unsteady aerodynamic loads from Experimental observations

* 1. Super-harmonics in loads and pressure
  2. Time-scale in pitch-up and pitch-down
  3. Amplitude/Frequency dependence
  4. Static hysteresis, Critical states crossing

3. Nonlinear Model Identification

a. Polynomial Structure

b. VVM Structure

c. Case studies of identification

1. Cz of F16XL
2. Cm of GTA
3. Cl, Cn of Delta 65
4. Comparative analysis

4. Influence on Flight Dynamics

5. Conclusions