

# MODELLING OF AIRCRAFT DYNAMICS IN FLIGHT AT HIGH ANGLE OF ATTACK

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## **Abstract**

- [1] *In this paper there was presented a proposal of modeling of airplane dynamics at full range of flow angles especially ways of assigning dynamics characteristics with consideration of hysteresis, plane orientation and some problems connected with that. These characteristics were calculated on the basis of modified strip method. This method makes opportunity to calculate total forces and moments of forces due to angular velocity at full flow angles. It means it is possible to assign global coefficients containing higher aerodynamics derivatives within mixed derivatives but not only the first derivative. Because of a fundamental influence of dynamics flow separation on a profile on aerodynamics characteristics, it was taken into account by usage the modified ONERA model. One paid attention on the way of describing of an aircraft's orientation. Applied kinematics relations like Euler angles and quaternion are not without defects. That is why in this paper there was also presented a description of problems connected with these defects and, in some cases, ways of solving them.*