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# Research of the problem of aircraft planar turn trajectory approximation in the range of heights and velocities on the basis of calculated pivotal trajectories

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*One of the problems to solve during the flight is the problem of the estimation of the area of the distinction of the aircraft. This task suggests numerous solutions of the system of nonlinear differential equations of the aircraft motion and cannot be solved on-board. This article describes a new approach of the obtaining of the estimated trajectory of the turn of the aircraft in planar without solving differential equations of the mathematical model in real-time mode. This approach is based on getting the net of trajectories according to the grid upon the initial velocity and height of the aircraft and obtaining polynomial approximation coefficients which describe these trajectories. As a result any new planar trajectory of the turn of the aircraft can be obtained by the approximation of the new trajectory between two nodes of the grid on the basis of the obtained set of coefficients. The time of solution, the error of calculus and the memory demanded for storing sets of coefficients are considered.*

**Keywords:** *approximation, turn trajectory, aircraft, inaccuracy, data base.*

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