

# Macroscopic Fundamental Diagram for Air Traffic: Preliminary Theoretic Results and Simulation Findings

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**Abstract**— In this paper we derive a model of air traffic system performance that describes the relationship between the occupancy of aircraft in the airspace and the effective output of the system – the Macroscopic Fundamental Diagram (MFD) model. We define the necessary variables, analytically derive the functional form of the MFD and validate the model using BlueSky open-source air traffic simulator.