ABSTRACT

The development of technology is a very big influence on the development of society which will have a direct impact on everyday life. Based on this, we are required to continue to innovate and one of them is technology in the field of aviation, namely Hypersonic Flight Control (HFC). In this field, a lot of research has been carried out starting from vehicle modeling, namely Hypersonic Flight Vehicles (HFV's) to flight paths, which certainly do not always run well, so a good calculation and control system is needed. The Hypersonic Airplane Space Tether Orbital Launch (HASTOL) concept was originally suggested by Dr. Robert L. Forward in his book, FUTURE MAGIC (Avon Books, New York, (1988)[1]. The focus of this journal is to control the flight trajectory that will be traversed by the aircraft/rocket and the method that will be used in this journal is the Vector Field Orbital Path to control the orbital path of an aircraft/rocket while in the air.

The implementation of this journal will use a simulation with the MATLAB application which will be integrated with the FlightGear application, starting with modeling and continuing with finding the linear form of the system and then doing the simulation. MATLAB (MATrix LABoratory) itself is a high-level, closed, and case sensitive programming language in a numerical computing environment developed by MathWorks, while FlightGear is an application that will simulate how an airplane/rocket starts from takeoff to the state when it is in the air.

With the simulation results and also a demo using the FlightGear application, it is expected to be able to visualize the situation when the plane/rocket is in the air and the orbital trajectory it passes.

Keywords*: Hypersonic Flight Control, MATLAB, Flightgear.*