
Development of Algorithms for the Magnetic Attitude Control of Small Spacecraft

Main problems of development of magnetic systems of satellite attitude control i.e. complexity of achievement of small spacecraft three-axis orientation; variability of magnetic field creating difficulties in development of attitude control laws with constant feedback coefficients; residual magnetic torque significantly influencing to the orientation of small satellites are considered.

5.1. INTRODUCTION

Currently small satellites (up to 100 kg) are widely used in space branch that gives the opportunity of solving various scientific and technological tasks with the lowest expenses as well as small satellites have relatively low cost and short terms of development. Experience of other countries having the program of small satellite development shows, that small satellites can fully replace large satellites when solving the tasks of detailed cartographic survey of the Earth, can solve the tasks of fire detection, carry out the survey of disaster zones, conduct the ecological monitoring, weather observations, also such satellites are designed to processing of new technologies and conduction of experiments in space.

However, in view of small mass and dimensions such satellites in a large extent are subjected to external influences provided by the Earth gravitational field, Earth atmosphere, solar pressure. Because of limitation of sizes and energetic resources