Name-Surname	Eugene Zhuleku
Thesis Title	*Magnetic towers in astrophysical accretion disks*
Supervisor	N. Vlahakis, Associate Professor
Summary	The purpose of this project is to study the driving and acceleration of astrophysical jets. We study in particular, magnetic towers in accretion disks, which are formed when from a differential rotating disk the magnetic pressure increases and as a result plasma is launched outside the disk. These outflows are collimated through the environmental pressure. Lynden-Bell studied this kind of jet whose main characteristic is the opposite polarity of the magnetic field. The project has two parts. In the first part we use Lynden-Bell's model so we consider a sequence of static configurations adopting the force-free approximation. Using energy conservation and appropriate approximations on the magnetic fields we find how the shape of the jet changes with time. In the second part we use the PLUTO code to numerically simulate nonrelativistic magnetic towers for different values of the jet-environment density ratio and the initial velocity of the jet.
Key words	Magnetohydrodynamics, stars: jets, galaxies: jets, methods: analytical, methods: numerical
Evaluation committee	N. Vlahakis, Associate Proffesor K. Tsinganos, Professor Th. Apostolatos, Associate Professor