

HEIGHTS ON PROJECTIVE SPACES AND DYNAMICAL SYSTEMS

Height theory is among the fundamental tools frequently used in number theory. A height function measures the arithmetic complexity of a point. It translates thus a geometric information into an arithmetic one.

The interaction between number theory and dynamical systems has been growing steadily. The theory of heights has shown to be specially useful in this setting.

A dynamical system is given by a set S together with a map $\phi : S \rightarrow S$. A primary goal in the study of dynamics is to classify the points of a dynamical system (S, ϕ) according to the behavior of their orbits. We will be interested in dynamical systems over a projective space S .

Let S be a projective variety with a map ϕ as above, one can associate a height function h_ϕ to ϕ and ask about the connection between the behaviour of a point P in the system (S, ϕ) and the height $h_\phi(P)$.

The main goal of this project is to understand the basic concepts behind arithmetic dynamics for systems in the projective space. The topics studied will be the following:

- Maps on projective spaces.
- Dynamical systems on projective spaces.
- Heights on projective spaces.

A possible bibliography would be:

REFERENCES

- [1] Silverman, Joseph H. The arithmetic of dynamical systems, GTM 241, Springer, 2007