2025
Introduction to Dieudonne theories

Time 13:30-15:00, July 9, 10, 11, 14, 15, 2025

Venue Room 509, Cosmology Building, NTU

Speaker | **Chia-Fu Yu** Academia Sinica

Organizer | **Chia-Fu Yu** Academia Sinica

Introduction & Purposes

The classical Dieudonne theory provides a concrete description of p-divisible groups in terms of semi-linear objects called Dieudonne modules. This provides a useful tool for studying the structure of abelian varieties in positive characteristic and hence the geometry of the moduli space of abelian varieties. The present course aims to introduce Dieudonne modules and both classical and Cartier-Dieudonne theory. The present course serves as the second episode of the coming Fall course "Moduli spaces of abelian varieties and Hecke symmetry" by Prof. Ching-Li Chai.

Outline & Descriptions

We plan to first introduce contravariant Dieudonne theory – the description of the Dieudonne functor, and the classification of Dieudonne modules up to isogeny (the Manin-Dieudonne theorem). For the remaining lectures, we will follow the excellent article [2] on the Cartier-Dieudonne theory, which describes formal groups over a general base to Cartier-Dieudonne modules.

References:

[1] Demazure, Lectures on p-Divisible Groups.
[2] Ching-Li Chai, Notes on Cartier-Dieudonne Theory.

Prerequisites

Rings of Witt vectors, representable functors, basics of abelian varieties.

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