Seminar:p-adic Hodge Theory (Spring 2023)

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January 19, 2023

1 Logistics

- When: Wednesdays, 4:20-5:50 PM ET

- Where: Room 622

- Organizer: Xiaorun Wu

2 Syllabus

a Part O: Introduction (1 week)

1. A first glimpse of p-adic Hodge Theory

2. A first glimpse of the Fargues-Fontaine curve

b Part I: Foundations of p-adic Hodge Theory (3 weeks)

1. Finite flat group schemes

2. p-divisible groups

3. Hodge-Tate decomposition

c Part II: Period rings and functors (3 weeks)

1. Fontaine's Formalism on period rings

2. de Rham Representations

3. Crystalline representations

d Part III: The Fargues-Fontaine Curve (6 weeks)

1. Construction of Fargues-Fontaine Curve

2. Geometric structure

3. Vector Bndles

4. Application to p-adic representations

e Part IV: (If time allows) Special Topics (2 weeks)

1. Digression-Jensen's Formula

2. Covers of the Fargues-Fontaine Curve

3. The Metric Structure of Y.