Workshop on Emerton-Gee stack

**Description**: The workshop series focuses on the recent work of Emerton and Gee, who constructed a formal algebraic stack of p-adic Galois representations for a finite extension of Qp. This concept is an algebra version of the formal deformation space introduced by Mazur. The construction of Emerton--Gee has immediate applications to topics such as crystalline lifting of Galois representations, and Serre weight conjectures.

This one-day-and-half workshop is the second in the series, which aims to define the Emerton--Gee stacks, and to discuss several questions related to (phi, Gamma)-modules and Fargues-Fontaine curve. We hope the workshop brings this interesting theory to researchers in related area, and explore possible new projects and collaborations. This workshop consists of four introductory lectures.

Reference:

[EG1] M. Emerton and T. Gee, Scheme theoretic image of certain morphisms of stacks.

[EG2] M. Emerton and T. Gee, Moduli stacks of etale (phi, Gamma)-modules and the existence of crystalline lifts.

**Organizers**: Yiwen Ding, Yongquan Hu, and Liang Xiao

**Speaker**: Liang Xiao (Peking University)

Title: Construction of moduli stack of phi-modules, and (phi, Gamma)-modules, 1-2

Abstract: I will explain Emerton-Gee's construction of moduli stack of phi-modules (following [EG1, section 5]) and (phi, Gamma)-modules (following [EG2, section 3]).

**Speaker**: Aditya Karnataki (Peking University)

Title: Almost Galois descent, 1-2

Abstract: I will introduce various periods rings, and in particular prove an almost Galois descent theorem to relate etale (G\_K, \phi)-modules and (phi, Gamma)-modules, following [EG2, section 2].

**Speaker**: Ruochuan Liu (Peking University)

Title: Introduction to Fargues-Fontaine curves, 1-2

Abstract: I will give a gentle introduction to the Fargues-Fontaine curves and its relation to Emerton-Gee stack.

**Schedule**:

September 25, 2019

9:30--11:00 Liang Xiao 1

14:00—15:00 Discussion session

15:15--16:45 Liang Xiao 2

September 26, 2019

10:00--11:00 Aditya Karnataki 1

11:15--12:15 Aditya Karnataki 2

14:00--15:00 Ruochuan Liu 1

15:15--16:15 Ruochuan Liu 2