

Online mini-workshop series on the geometric realization of p -adic local Langlands

Organizers: Yiwen Ding, Yongquan Hu, and Liang Xiao

This mini-workshop series on p -adic local Langlands, jointly organized by BICMR (Beijing International Center of Mathematical Research) and MCM (Morningside Center of Mathematics). We mainly focus on the series works of Colmez–Dospinescu–Niziol on the étale cohomology of Drinfeld towers and p -adic period domains. We hope this result may shed some light on the conjectural p -adic local Langlands correspondence.

We meet twice a week for two 90-minute lectures each day.

Talk schedule

Date time	Speaker	Content	Zoom info
7/29 2:30–4pm	Liang Xiao	Talk 1: Summarize the main results. Summarize the main results of Colmez–Dospinescu–Niziol’s series of papers [CDN1], [CDN2], [CDN3], [CDHN]. Discuss the main techniques involved in each of the paper and improvements/adaptability along the development of these papers.	ID:466 356 2952 Pswd:mcm0729
7/29 4–5:30pm	Liang Xiao	Talk 2: Summarize [CDN1]. Since we have already learned studied this paper before, we give a quick summary of the content as well as the proof of involved in this paper.	
7/31 2:30–4pm	Ruochuan Liu	Talk 3: Syntomic cohomology I. Following [CDN2, §3] to discuss syntomic cohomology (which is not too much different from usual rigid cohomology)	ID:466 356 2952 Pswd:mcm0731
7/31 4–5:30pm	Yichao Tian	Talk 4: Syntomic cohomology II. Cover [CDN2, §4].	
8/5 2:30–4pm	Haoran Wang	Talk 5: Pro-étale cohomology of Drinfeld half-space. Following [CDN2, §5] to compute the pro-étale cohomology of Drinfeld half-space.	ID:466 356 2952 Pswd:mcm0805
8/5 4–5:30pm	Aditya Karnatak	Talk 6: Étale cohomology of Drinfeld half-space. Following [CDN2, §6,7] to compute the étale cohomology of Drinfeld half-space.	

8/7 2:30–4pm	Longke Tang	Talk 7: Quick summary of \mathbb{A}_{inf}-cohomology of Bhatt–Morrow–Scholze Cover [CDN3, §2,3]; give an introduction to \mathbb{A}_{inf} -cohomology.	ID:466 356 2952 Pswd:mcm0807
8/7 4–5:30pm	Hui Gao	Talk 8: \mathbb{A}_{inf}-cohomology of Drinfeld symmetric spaces. Cover [CDN3, §4,5].	
8/12 2:30–4pm	Yiwen Ding	Talk 9: Representation theoretic background for generalized Steinberg representations Cover [CDHN, §2]	ID:466 356 2952 Pswd:mcm0812
8/12 4–5:30pm	Xu Shen	Talk 10: p-adic period domains. Cover [CDHN, §3,4].	
8/14 2:30–4pm	Liang Xiao	Talk 11: Geometry of the complements of period domains Cover [CDHN, §5 and Appendix].	ID:466 356 2952 Pswd:mcm0814
8/14 4–5:30pm	Gabriel Dospinescu	Talk 12: Main results on the p-adic étale cohomology of period domains. Cover [CDHN, §6].	

REFERENCES

- [CDN1] P. Colmez, G. Dospinescu, and W. Niziol, Cohomologie p -adique de la tour de Drinfeld: le cas de la dimension 1, *J. AMS* **33** (2020), 311–362.
- [CDN2] P. Colmez, G. Dospinescu, and W. Niziol, Cohomology of p -adic Stein spaces, *Invent. Math.* **219** (2020), 873–985.
- [CDN3] P. Colmez, G. Dospinescu, and W. Niziol, Integral p -adic étale cohomology of Drinfeld symmetric spaces, [arXiv:1905.11495](https://arxiv.org/abs/1905.11495).
- [CDHN] P. Colmez, G. Dospinescu, J. Hauseux, and W. Niziol, p -adic étale cohomology of period domains, [arXiv:2001.06809](https://arxiv.org/abs/2001.06809).