

Abstract Submitted  
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**Dynamical control and detection of topological properties in 2D optical lattices**<sup>1</sup> CHENGDONG HE, ZEJIAN REN, ENTONG ZHAO, ELNUR HAJIYEV, GYU BOONG JO, Hong Kong University of Science and Technology — In this talk, we report our progress on the development of versatile two-dimensional (2D) optical lattices with non-trivial topology induced by spin-orbit coupling [?]. Focusing on quench spin dynamics between topological trivial and nontrivial bands, we dynamically characterize band topology. In particular, topological charges can be detected from spin texture measurements by a series of sequential quench processes, which eventually classifies band topology. It is expected that this 2D lattice platform would allow us not only to engineer the topological hamiltonian in spatial domain but also to investigate different lattice structures beyond the standard square lattice structure.

## References

- [1] B. Song, C. He, S. Niu, L. Zhang, Z. Ren, X.-J. Liu, and G.-B. Jo, Nature Physics 15, 911 (2019).

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