

Hecke

Toan Q. Pham

Wednesday 25th November, 2020

Abstract

The naive goal of this notes is to include all the relevant stories around the word Hecke.

1 Buzzwords/Summaries

Some of the few terminologies I don't know that I would like to learn at some point:

Abstract Iwahori-Hecke algebra. See [12]. Their representations [13].

Iwahori-Hecke algebra, finite Hecke algebra realised under (p-adic) representation theory. Bump, HKP [1, 2].

Geometric construction of the double affine Hecke algebra via affine flag manifolds [6](?). Geometric realisation of Hecke algebras. See [11].

DAHA, Rational DAHA, Tits DAHA, Cherednik algebra: the people I know are Cherednik, Etingof, Ginzburg. Connection to Macdonald's polynomial and something from mathematical physics (?).

Higher representations: Raphael Rouquier. 2-representations of Kac-Moody. Rouquier [10, 9].

Quiver Hecke algebra?

Hecke eigenvalues, Hecke eigensheaves, Hecke correspondence in Langlands program (?) Geometric Satake as categorification of spherical Hecke (?). See Edward Frenkel for many surveys about this.

Hecke operators in modular forms (?).

References

- BumpHecke [1] Bump, Hecke algebra notes.
- HKP [2] Haines, Kottwitz, Prasad, Iwahori-Hecke algebra.
- Sol [3] Maarten Solleveld, Affine Hecke algebras and their representations
- BDP [4] Braverman, Kazhdan, Patnaik, Iwahori-Hecke algebra for p -adic loop groups.

-
- BK** [5] Alexander Braverman and David Kazhdan, The spherical Hecke algebra for affine Kac-Moody groups.
- Schi** [6] Alexander Schmitt. Affine flag manifolds and Principal bundles.
- BK2** [7] Alexander Braverman and David Kazhdan. Representations of affine Kac-Moody groups over local and global fields: a survey of some recent results
- Rou** [8] Raphael Rouquier, Peng Shan, Michela Varagnolo, Eric Vasserot.
- Rou2** [9] Raphael Rouquier, 2-Kac-Moody algebras.
- Rou3** [10] Raphael Rouquier, Quiver Hecke algebras and 2-Lie-Algebras categorification and cyclotomic rational DAHA.
- Luis** [11] Algebraic and geometric methods in representation theory. <https://arxiv.org/pdf/1409.8003.pdf>.
- Luis2** [12] Hecke algebras with unequal parameters. <https://arxiv.org/abs/math/0208154>.
- Sol** [13] Affine Hecke algebras and their representations Maarten Solleveld. <https://arxiv.org/abs/2009.03007>