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Iwahori-Hecke model for supersingular representations of  $GL_2(\mathbb{Q}_p)$ .

(English) [Zbl 06377563](#)

J. Algebra 423, 1-27 (2015).

Summary: In this paper, we realize a regular supersingular representation  $\pi$  of  $GL_2(\mathbb{Q}_p)$  as a quotient of a representation induced from the Iwahori subgroup of  $GL_2(\mathbb{Q}_p)$ . We also show that this realization provides a uniform way of looking at all the self-extensions of  $\pi$  which have a four dimensional space of  $I(1)$ -invariants.

**MSC:**

- 11F33 Congruences for ( $p$ -adic) modular forms
- 11F70 Representation-theoretic methods in automorphic theory
- 11F80 Galois representations
- 11F85  $p$ -adic theory, local fields

Cited in 1 Review

**Keywords:**

mod  $p$  representations of  $p$ -adic groups; supersingular representations; self-extensions of supersingular representations

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**References:**

- [1] Anandavardhanan, U. K.; Borisagar, Gautam H.: On the  $K(n)$ -invariants of a supersingular representation of  $GL_2(\mathbb{Q}_p)$ , Ramanujan math. Soc. lect. Notes ser. 20, 55-75 (2013) · Zbl 1322.22019
- [2] Berger, Laurent: Central characters for smooth irreducible modular representations of  $GL_2(\mathbb{Q}_p)$ , Rend. semin. Mat. univ. Padova 128, 1-6 (2012)
- [3] Barthel, L.; Livné, R.: Irreducible modular representations of  $GL_2$  of a local field, Duke math. J. 75, No. 2, 261-292 (1994) · Zbl 0826.22019 · doi:10.1215/S0012-7094-94-07508-X
- [4] Barthel, L.; Livné, R.: Modular representations of  $GL_2$  of a local field: the ordinary, unramified case, J. number theory 55, No. 1, 1-27 (1995) · Zbl 0841.11026 · doi:10.1006/jnth.1995.1124
- [5] Breuil, Christophe; Paškūnas, Vytautas: Towards a modulo  $p$  Langlands correspondence for  $GL_2$ , Mem. amer. Math. soc. 216, No. 1016 (2012)
- [6] Breuil, Christophe: Sur quelques représentations modulaires et  $p$ -adiques de  $GL_2(\mathbb{Q}_p)$ . I, Compos. math. 138, No. 2, 165-188 (2003) · Zbl 1044.11041 · doi:10.1023/A:1026191928449
- [7] Christophe Breuil, Representations of Galois and of  $GL_2$  in characteristic  $p$ , Graduate Course at Columbia University, 2007.
- [8] Breuil, Christophe: The emerging  $p$ -adic Langlands programme, 203-230 (2010) · Zbl 1368.11123
- [9] Carter, R. W.; Lusztig, G.: Modular representations of finite groups of Lie type, Proc. lond. Math. soc. (3) 32, No. 2, 347-384 (1976) · Zbl 0338.20013 · doi:10.1112/plms/s3-32.2.347
- [10] Colmez, Pierre: Représentations de  $GL_2(\mathbb{Q}_p)$  et  $(\phi, \Gamma)$ -modules, Astérisque, No. 330, 281-509 (2010) · Zbl 1218.11107 · [http://smf4.emath.fr/en/Publications/Asterisque/2010/330/html/smf\\_ast\\_330\\_281-509.php](http://smf4.emath.fr/en/Publications/Asterisque/2010/330/html/smf_ast_330_281-509.php)

- [11] Kisin, Mark: Deformations of  $gqp$  and  $GL_2(Qp)$  representations, *Astérisque*, No. 330, 511-528 (2010) · Zbl 1233.11126 · [http://smf4.emath.fr/en/Publications/Asterisque/2010/330/html/smf\\_ast\\_330\\_511-528.php](http://smf4.emath.fr/en/Publications/Asterisque/2010/330/html/smf_ast_330_511-528.php)
- [12] Morra, Stefano: Explicit description of irreducible  $GL_2(Qp)$ -representations over  $F\{\!\!\{p\}\!\!\}$ , *J. algebra* 339, 252-303 (2011) · Zbl 1239.22012
- [13] Morra, Stefano: Invariant elements for  $p$ -modular representations of  $GL_2(Qp)$ , *Trans. amer. Math. soc.* 365, No. 12, 6625-6667 (2013) · Zbl 1280.22021
- [14] Ollivier, Rachel: Le foncteur des invariants sous l'action du pro- $p$ -iwahori de  $GL_2(F)$ , *J. reine angew. Math.* 635, 149-185 (2009) · Zbl 1181.22017 · doi:10.1515/CRELLE.2009.078
- [15] Paškūnas, Vytautas: Coefficient systems and supersingular representations of  $GL_2(F)$ , *Mém. soc. Math. fr. (N.S.)*, No. 99 (2004)
- [16] Paškūnas, Vytautas: Extensions for supersingular representations of  $GL_2(Qp)$ , *Astérisque*, No. 331, 317-353 (2010)
- [17] Schein, Michael M.: On the universal supersingular mod  $p$  representations of  $GL_2(F)$ , *J. number theory* 141, 242-277 (2014) · Zbl 1295.11057
- [18] Vignéras, Marie-France: Representations modulo  $p$  of the  $p$ -adic group  $GL(2, F)$ , *Compos. math.* 140, No. 2, 333-358 (2004) · Zbl 1049.22010 · doi:10.1112/S0010437X03000071

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