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The p-adic analytic space of pseudocharacters of a profinite group and pseudorepresentations over arbitrary rings. (English) Zbl 1350.11063

Diamond, Fred (ed.) et al., Automorphic forms and Galois representations. Proceedings of the 94th London Mathematical Society (LMS) – EPSRC Durham symposium, Durham, UK, July 18–28, 2011. Volume 1. Cambridge: Cambridge University Press (ISBN 978-1-107-69192-6/pbk; 978-1-107-44633-5/ebook). London Mathematical Society Lecture Note Series 414, 221-285 (2014).

Author's abstract: Let G be a profinite group which is topologically finitely generated, p a prime number and $d \geq 1$ an integer. We show that the functor from rigid analytic spaces over $\mathbb{Q}_p$, to sets, which associates to a rigid space Y the set of continuous d-dimensional pseudocharacters $G \to \mathcal{O}(Y)$, is representable by a quasi-Stein rigid analytic space X, and we study its general properties.

Our main tool is a theory of determinants extending the one of pseudocharacters but which works over an arbitrary base ring; an independent aim of this chapter is to expose the main facts of this theory. The moduli space X is constructed as the generic fiber of the moduli formal scheme of continuous formal determinants on G of dimension d.

As an application to number theory, this provides a framework to study rigid analytic families of Galois representations (e.g., eigenvarieties) and generic fibers of pseudodeformation spaces (especially in the "residually reducible" case, including when $p \leq d$).

For the entire collection see [Zbl 1310.11002].

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MSC:

11F80	Galois representations
22E50	Representations of Lie and linear algebraic groups over local fields
14G22	Rigid analytic geometry
13A99	General commutative ring theory
11F85	p-adic theory, local fields

Keywords:

rigid analytic spaces; determinants; Galois representations; eigenvarieties