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Families of de Rham representations and p -adic monodromy. (Familles de représentations de de Rham et monodromie p -adique.) (French. English summary) [[Zbl 1168.11020](#)]

Berger, Laurent (ed.) et al., Représentation p -adiques de groupes p -adiques I. Représentations galoisiennes et (φ, Γ) -modules. Paris: Société Mathématique de France (ISBN 978-2-85629-256-3/pbk). Astérisque 319, 303-337 (2008).

Let K be a local field containing \mathbb{Q}_p . Recall that the category of p -adic representations of $\text{Gal}(\overline{K}/K)$ is equivalent with the corresponding category of (φ, Γ) -module over the Robba-ring of K . The aim of this article is to study p -adically varying families of p -adic representations of $G_K = \text{Gal}(\overline{K}/K)$, and the behaviour of the associated (φ, Γ) -modules.

Let S be a \mathbb{Q}_p -Banach algebra whose residue fields at points in the maximal spectrum \mathfrak{X} are finite extensions of \mathbb{Q}_p . By definition, a family of p -adic representations of $G_K = \text{Gal}(\overline{K}/K)$ is a free S -module V of finite rank endowed with an S -linear and continuous G_K -action. Using the methods of Tate-Sen, the authors prove that for such a V there exists a $S \widehat{\otimes} \mathbf{B}_K^\dagger$ -module $D^\dagger(V)$, locally free and stable for φ and Γ_K , whose fibres at points of \mathfrak{X} are exactly the usual (φ, Γ) -modules assigned to the corresponding fibres of V .

As applications it is shown that (1) p -adic representations of $\text{Gal}(\overline{K}/K)$ are overconvergent, and (2) in the above setting, the set of points of \mathfrak{X} where the fibre of V is de Rham (or semistable, or crystalline) with Hodge-Tate weights in a fixed interval is an analytic subspace of \mathfrak{X} .

For the entire collection see [[Zbl 1156.14002](#)].

Reviewer: [Elmar Große-Klönne \(Berlin\)](#)

MSC:

- [11F80](#) Galois representations
- [11F85](#) p -adic theory, local fields
- [11S25](#) Galois cohomology
- [12H25](#) p -adic differential equations
- [14F30](#) p -adic cohomology, crystalline cohomology

Cited in **4** Reviews
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Keywords:

p -adic Galois representation; families; p -adic monodromy; Sen-Tate method