

# An epsilon constant conjecture for higher dimensional representations

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The equivariant local epsilon constant conjecture was formulated in various forms by Fontaine and Perrin-Riou, Benois and Berger, Fukaya and Kato and others. If  $N/K$  is a finite Galois extension of  $p$ -adic fields and  $V$  a  $p$ -adic representation of  $G_K$ , then the above conjecture describes the epsilon constants attached to  $V$  in terms of the Galois cohomology of  $T$ , where  $T$  is a  $G_K$ -stable  $\mathbb{Z}_p$ -sublattice  $T$  such that  $V = T \otimes_{\mathbb{Z}_p} \mathbb{Q}_p$ .

Here we will discuss the case when  $N/K$  is at most weakly ramified (this includes the case of tame ramification) and  $T = \mathbb{Z}_p^r(\chi^{\text{cyc}})(\rho^{\text{nr}})$ , i.e. the  $\mathbb{Z}_p$ -module  $\mathbb{Z}_p^r$  with the trivial action of  $G_K$  twisted by the cyclotomic character and by an unramified representation  $\rho^{\text{nr}} : G_K \rightarrow \text{Gl}_r(\mathbb{Z}_p)$ . The main results generalize previous work by Izychev, Venjakob, Bley and the author. This is a joint work with Werner Bley.