

# Towards regulator maps for Lubin-Tate extensions

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2017-10-05

We report on a joint project with Peter Schneider: let  $L_\infty$  be a Lubin-Tate tower over a finite extension  $L$  of  $\mathbb{Q}_p$  with Galois group  $\Gamma_L = G(L_\infty/L)$ . We extend Kisin-Ren's theory of  $(\varphi_L, \Gamma_L)$ -modules and of Wach-modules for  $L$ -analytic, crystalline representations of  $G_L$ , the absolute Galois group of  $L$ . If  $\chi_{LT}$  and  $\chi_{cyc}$  denote the Lubin-Tate and  $p$ -cyclotomic character of  $G_L$ , respectively, then, for a Galois-stable  $O_L$ -lattice  $T$  in a crystalline Galois representation  $V$  over  $L$  such that  $V(\chi_{cyc}\chi_{LT}^{-1})$  is  $L$ -analytic and with non-negative Hodge-Tate weights, we suggest a definition of a regulator map from the Iwasawa cohomology of  $T$  over  $L_\infty$  into  $D_{cris,L}(V)$  tensor the locally  $L$ -analytic distribution algebra of  $\Gamma_L$ .