

FOLIATIONS IN MODULI SPACES OF ABELIAN VARIETIES AND BOUNDED GLOBAL
 G -SHTUKAS

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In this communication we review and study moduli spaces of abelian varieties, of p -divisible groups, of bounded global G -shtukas and their possible foliations in characteristic p . At first I recall the definitions of the above mentioned notions. Then we shortly survey results by Rapoport, Richartz [1], by Oort [2], by Mantovan [3], by Arasteh Rad and Hartle [4], by Hartl and Viehmann [5], by Harris and Taylor [6] and by Weiß [7]. More completely we discuss results by Weiß [7]. Let C be a smooth projective geometrically irreducible curve with the function field $\mathbb{F}_q(C)$ over a finite field \mathbb{F}_q with q elements. Let G be a parahoric Bruhat-Tits group scheme over C . Author [7] considers “a foliation structure for Newton strata moduli spaces of bounded global G -shtukas with H -level structure for an arbitrary parahoric Bruhat-Tits group G ” and “Igusa varieties”. She obtains a morphism (Main Theorem 0.1) to the moduli space of global G -shtukas. The author then relates here foliation structure to Oort’s foliations, to Harris and Taylor and to Mantovan. These results, although difficult to explain in a short review, are well summarised in a short Introduction. Below bounded global G -shtukas with H -level structure are considered. Briefly, the general idea is to start with a foliation structure on the moduli space of such global G -shtukas and describe it “as a product of a covering of central leaves by Igusa varieties with truncated Rapoport-Zink spaces”. The Main Theorem 0.1 gives the morphism from the product of author’s Igusa varieties and truncated Rapoport-Zink spaces to the moduli spaces of global G -shtukas. The morphism is finite by the Proposition 6.19. The author also gives an application of the Main Theorem 0.1 to the leaves inside a Newton stratum and compute dimensions of these leaves which turns out to be the same for all leaves. For some details, along with the references above, please see [8, 9].

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