

Arithmetic and Algebraic Geometry: A conference in honor of Ofer Gabber
on the occasion of his 60th birthday

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On the classification of p -healthy regular schemes

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A regular local ring R of dimension at least 2 and mixed characteristic $(0,p)$ is called p -healthy if each p -divisible group over the the punctured spectrum of R extends to a p -divisible group over $\text{Spec } R$. In the book of Faltings and Chai, it has been claimed that, in the current language, each such R is p -healthy. A counterexample due to Raynaud, recollected by Ogus, and worked out by Gabber in 1992 shows that this claim is far from being true. After several erroneous attempts by different specialists, just in 2010, Zink and Vasiu were able to generalize Gabber's counterexample, to show the existence of plenty of p -healthy regular rings of dimension 2 and to provide a first correct proof of the uniqueness of integral canonical models of Shimura varieties. As two joint papers with Gabber, we report on a complete classification of p -healthy regular rings of dimension 2 which are henselian and have perfect residue fields and on the very first examples of p -healthy regular schemes of arbitrary dimension greater than 2. These examples in dimension greater than 2 correct several errors in the literature and provide a new (second) proof of the uniqueness of integral canonical models of Shimura varieties.

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