

De Rham $K(\pi,1)$

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Abstract: Motivated by the work of Esnault–Hai, one has the notion of de Rham $K(\pi, 1)$ schemes, defined as follows. Given a smooth, proper, geometrically connected scheme X over a field k of characteristic 0 and a base point $x \in X(k)$, one can define its differential fundamental group $\pi^{\text{diff}}(X/k)$, which arises from the Tannakian duality of the category of coherent integrable connections on X . Using the formalism of δ -functors, one can define natural morphisms between the group scheme cohomology of $\pi^{\text{diff}}(X/k)$ and the de Rham cohomology of X . One says that X with base point $x \in X(k)$ is de Rham $K(\pi, 1)$ if these morphisms are all isomorphisms.

In this talk, I will discuss some examples of de Rham $K(\pi, 1)$ schemes and related questions. This talk is based on joint work with Nguyen Quang Khai, Phung Ho Hai, and Dao Van Thinh, as well as work in progress with H  l  ne Esnault.